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SOAP and SANITARY CHEMICALS

CONTENTS

Editorials 33
Soap Export Controls 35
Soap Expands Its Industrial Uses 37
By Milton A. Lesser
Glycerine, Its History, Properties and Uses in Industry 41
By N. N. Dalton
Federal Specification for Painted Surface Cleaner 43
The New Insecticide, Fungicide, and Rodenticide Act 114
By C. C. McDonnell
New Medium for Studying Quaternary Bactericides 119
By E. H. Armbruster and G. M. Ridenour
Toxicity of DDT Residual Sprays on Various Surfaces 123
By H. A. U. Monro, A. A. Beaulieu and R. Delisle
The Electron Microscope Studies Bright-drying Wax Dispersions 131
By Daniel Schoenholz and Cyril S. Kimball
Federal Proposal for DDT and DDT Emulsion Concentrate Specs. 137
Soap Plant Observer 44
Bids and Awards 55
New Trademarks 57
Raw Material Markets 61
Production Clinic 71
Products and Processes 79
New Patents 81
Sanitary Products Section 87
Classified Advertising 171
Advertisers' Index 175

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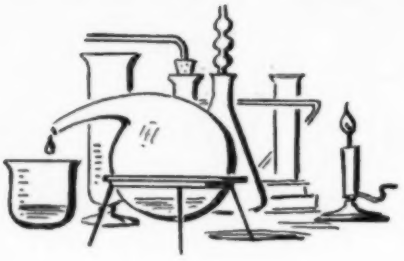

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AS THE EDITOR SEES IT

COMMUNAL washing machines and launderettes are potential disease spreaders and a menace to the public health, according to a charge made in Congress recently. Answering the allegation that clothing washed in them shows a high bacteria count, and that the machines themselves have been shown to harbor germs of syphilis, pneumonia, diphtheria, and other dreaded diseases, Dr. Samuel Flint, acting as New York City Health Commissioner in the absence of Dr. Israel Weinstein on vacation, stated that the congressman who made the charge was "unduly alarmed." And the good doctor then went on to state that "the combination of hot water and the soap powders together with the series of rinsings is adequate to destroy disease-bearing organisms."

Apparently, Donald L. O'Toole, New York Congressman who made the original charge had a bacteriologist check up on a few of these quarter-in-the-slot laundry machines. But Dr. Flint evidently did not let anything so inconsequential as scientific data stem his issuance once again of the old favorite of the medicos, "soap and hot water is the best germ killer." If only the soap industry these many years had had the doctors to deal with in establishing the bacteriological efficacy of soaps, what a wonderful world it would have been. But always the bacteriologists and their damned test tubes spoiled the story.

Although the New York health doctor may give his germ-killing views on soap and water with impunity, we warn soapers who might have ambitions in this direction to avoid scrupulously any such statements in connection with their products. If there are those with doubts, we suggest that they note particularly the case, reported herewith, of an old-time scouring cleanser in a similar circumstance. We agree Mr. O'Toole is "unduly alarmed," and maybe Doc Flint is right in a practical sort of way. But when the doctor went into the old "soap and water" routine, we think that he weakened his case.

MANUFACTURERS of cleaning and scouring powders who believe that their products are germicidal on the basis that they physically remove germs or germ-bearing soil from objects on which they are used, had best keep their views to themselves. In the light of a recent court action brought under the Insecticide Act of 1910 by the Department of Agriculture, reference to germs, germicidal action, antiseptic action and the like on the labels of cleansers and scouring products, unless the products themselves actually are germicidal under the recommended condition of use, cannot be made. Although we believe this same general type of case has been taken to court in past years by the USDA, the facts of this relatively recent decision against a well-known product manufactured by an old, reputable firm, bring it into more prominent attention.

Claims of germicidal action by soaps, detergents and cleansers because of the supposed physical removal of the bacteria or fungi have been a more or less common mistake for years. Controversies have gone on for a long time over the effectiveness of germicidal agents added to soaps, to dish-washing compounds and other cleaners, —over the need and the value of their addition. Cleanliness and freedom from bacteria have at times been considered mistakenly synonymous. Ordinary washing of clothes and linen is commonly believed to remove a multitude of sins, including germ life.

This court decision in the case of a scouring powder can act as a warning to all manufacturers. It does not invoke a new principle, but merely re-emphasizes one which has been in effect under the Insecticide Law for over thirty years. If germs, bacteria, fungi, or germicidal or antiseptic action are mentioned or claimed on the label of a cleaning agent, the product must in itself kill germs,—and the ingredients producing this effect and their amount must also be label stated under the law. In short, as soon as a cleanser manufacturer makes any germicidal label claim

whatever for his product, he automatically places that product under the purview of the Insecticide Act, and must be governed accordingly. Best, it seems to us, is to avoid any such references on all cleaning and detergent products not specifically formulated to give positive germicidal action. The law and court decisions leave nothing to the imagination of label writers.

HOW much egg in an "egg shampoo"? The Food and Drug Administration has recently ruled on this momentous question at the request of the Toilet Goods Association. Like most business organizations, TGA asked FDA very definite questions about egg shampoos. In order that there might be something akin to a specific figure on which a manufacturer might hang the egg content of his product, TGA even went so far as to ask if one per cent dehydrated egg is enough egg in an egg shampoo. And that pinned FDA down, but just momentarily. Back came FDA with ". . . where the product does not supply a significant proportion of egg, we doubt that it would be possible to mention the presence of egg in its name without misleading the consumer."

And how much is "a significant proportion" of egg? We don't know, but it must at least be more than one per cent, the figure which FDA deftly fended to one side. But they hinted at a figure when they said: ". . . when this type of shampoo was popular, it was the custom to use one egg with each shampoo." And there stands a guiding light for all manufacturers,—and a hint for a new shampoo package idea, a carton of fresh country eggs and a six-ounce bottle of 20 per cent coconut oil potash soap, all in a box neatly embroidered with chicks floating about in a sea of golden lather. If any eggs are left over when the soap solution is used up, directions could suggest that they be cooked for breakfast. A two-purpose gift package idea. And no "misleading the consumer" thoughts at FDA.

LIKE any product or market forced to the high levels reached by copra prices a couple of months ago,—the highest in world history,—a sharp decline at any time is obviously the logical expectation. But when this actually happened in copra, it brought confusion among Philippine producers and shippers and practically economic chaos among a third of the population of the Islands. The copra price collapse was very shortly reflected in a precipitate drop in production and the revelation of abuses that always accompany excessively high speculative prices.

The expressed belief that the end of the world had come as far as it concerns the Philippine copra industry, was, we feel, the natural reaction when the bottom dropped out of prices and they fell almost seventy percent. As black as the situation may appear, we do not believe for a moment that any irreparable damage has been done to copra production in the Islands. Hard hit producers have been, but they had it coming if we may judge their plight in the light of Old Man Experience.

The copra industry will regain its equilibrium in comparatively short order. The future of American coconut oil supplies is not, we are confident, in serious danger. Production may receive a temporary set-back and stocks and prices in the United States may reflect this in the near future. But, we believe, a return to normal production at normal prices will follow the present headache in due course.

EXTENSION of controls on exports and imports of oils, fats, and soaps for six months was more or less expected. Frankly, we had hoped Congress would let the thing die so that there would be one less government finger in the business pie. Nobody appeared to be too excited about the extension of controls except some firms who desired to export a portion of their soap production which they are finding difficulty selling in the domestic market. In their attempts to secure export licenses, they evidently find themselves stymied by the usual maze of government red tape.

As for fats and oils there was considerable sentiment favoring the end of controls, which many felt could have been abandoned without too serious an effect on world fat supplies. Fat needs are undoubtedly being met to a greater extent by local production. Sooner or later, the market is going to have to face the situation which may develop when the cork is pulled and all controls are off. We wonder in the light of developments of the past few months if today is not just as good a time to face the issue as six months hence.

Soap Export Controls

Soap export controls —originally intended to expire on June 30, 1947, now extended thru Feb. 29th, 1948.

Loading a Grace Line freighter in New York for the west Coast of South America.

GOVERNMENTAL control over exports and imports of soaps, fats and oils has been extended to February 29, 1948. These controls, which originally were to have lapsed this year on June 30, were first extended for two weeks on a temporary basis. Then on July 15 the president signed HR-3647 continuing controls for eight months beyond the original expiration date.

Prior to action by the House and Senate on the presidential request for extension of control powers, there had been considerable attention focused on the subject both in governmental circles and in the soap industry.

And there seems to be no assurance, incidentally, that the action taken by Congress will end the controversy in the soap industry. Some factors are reported to feel strongly that export controls on soap sales are holding the industry back from expanding its foreign market at a time when this market has again assumed a greater measure of importance, and opportunity is knocking, and that the sooner export controls join fat use controls and pricing regulations in limbo, the better off the industry will be.

Markets for soap in the export field have held little attraction to American soapers for the past five or six years, hard put as they have been to take care of the demands of domestic customers. Now, however, some of them point out, domestic demand is off sharply, there is plenty of soap available for sale, and they feel quite strongly interested in picking off export markets before these too dry up and perhaps disappear. Under the "control set-up" most of them feel that they have little chance of penetrating the government red tape and getting approval for export shipments. A typical soap maker reported to *Soap*'s representative that he had made numerous requests for approval of contemplated export shipments, that all such requests had been turned down after considerable delay, red-tape and expenditure of effort, and he would make no further move to tap the export market until all controls were off.

Another soap maker whose plant was built up to a rather high capacity under the stimulus of wartime orders from the government, and whose present problem in disposal of capacity production is thus far greater than that of the average soaper, has taken a strong stand on the subject of the export controls, and over recent weeks has been quite active in making his problem known to various Senators and Representatives. In a general statement of his views (addressed to various legislators prior to the recent vote) he made a number of charges of unfair and discriminatory treatment in the operation of the controls. We quote briefly from his statement as follows:

> If soap and soap powders are to be included under the restrictions on trading in fats and oils, why not include rubber balls, rubber toys, candles, crayons and a hundred other items manufactured out of fatty acids?
>
> The large soap manufacturers prefer controls on export because such controls tend to kill the competition of the smaller soapers. The large soapmaker has no trouble in selling his soap today at a high price whereas many small soapers have to depend to a large extent on government contracts which are very small at present or other highly competitive business that can only be obtained through bidding and maintaining low prices. If exports on soap were decontrolled, it would help the small soaper to maintain his operations by developing export markets.

Soap Exports

Quantities in thousands of pounds
Values in thousands of dollars

(Source: Statistical Abstract of the U. S.)

Year	Medicated Quan.	Medicated Val.	Toilet and Fancy Quan.	Toilet and Fancy Val.	Laundry Quan.	Laundry Val.	Powdered and Flakes Quan.	Powdered and Flakes Val.	Shaving Soaps Creams, etc. Quan.	Shaving Soaps Creams, etc. Val.	Other Quan.	Other Val.	Scouring Soaps and Powders Quan.	Scouring Soaps and Powders Val.	Household Wash. Powders Quan.	Household Wash. Powders Val.	Total Quan.	Total Val.
1925	..	..	6,761	2,805	55,806	4,009	..	..	..	..	13,098	1,222	..	..	..	..	75,665	8,036
1926	..	..	8,975	3,038	60,767	4,120	..	..	..	..	13,625	1,245	4,935	263	..	..	88,302	8,666
1927	..	..	8,187	2,802	56,229	3,878	..	..	..	..	12,992	1,183	5,493	317	..	..	82,901	8,180
1928	..	..	7,237	2,299	47,617	3,377	..	..	..	..	9,022	827	5,821	363	..	..	69,697	6,866
1929	..	..	6,586	1,984	47,344	3,193	2,322	231	1,060	537	6,547	597	10,682	736	..	..	74,541	7,278
1930	563	358	5,443	1,235	37,866	2,534	2,269	202	1,194	480	3,683	356	11,788	829	..	..	62,806	5,994
1931	432	261	5,062	1,020	28,820	1,756	1,703	137	1,282	421	1,971	178	7,964	528	..	..	47,254	4,301
1932	307	189	4,618	708	22,957	1,215	890	71	901	266	1,160	103	3,522	262	562	32	34,917	2,846
1933	326	181	5,990	716	14,310	621	800	64	515	184	811	77	3,077	242	612	36	26,441	2,121
1934	267	169	5,969	856	13,096	640	1,009	80	535	202	1,005	78	2,882	228	819	42	25,582	2,295
1935	254	143	7,637	1,073	12,134	636	1,066	103	621	237	1,124	96	3,490	252	797	44	27,123	2,584
1936	299	148	8,914	1,211	11,559	604	1,251	107	657	253	788	86	4,409	320	..	..	27,877	2,729
1937	650	258	9,195	1,332	15,635	811	1,342	122	664	250	807	92	4,399	337	..	..	32,692	3,202
1938	362	187	10,248	1,385	8,895	471	1,403	125	554	226	1,027	106	4,024	296	..	..	26,513	2,796
1939	364	197	13,041	1,675	12,723	654	2,511	214	616	239	1,191	126	4,680	343	..	..	35,126	3,448
1940	281	114	8,431	1,211	14,076	647	1,631	143	564	207	1,184	128	4,255	288	..	..	30,422	2,738
1941	356	139	10,911	1,679	15,035	771	2,509	234	494	271	1,172	147	4,330	322	..	..	34,807	3,563
1942	206	78	5,193	1,113	17,292	1,467	2,415	294	297	177	852	105	2,839	246	..	..	29,095	3,480
1943*	219	77	7,561	1,505	27,578	1,743	1,667	225	610	314	1,552	200	3,406	295	..	..	43,593	4,359
1944	335	162	13,695	3,072	12,678	991	1,656	256	977	747	742	92	4,624	440	..	..	34,707	5,860
1945	599	372	35,678	6,742	43,501	3,539	5,867	872	715	630	1,390	191	4,540	446	..	..	92,290	12,796
1946	1,061	285	24,309	4,578	57,711	4,536	6,557	918	1,881	1,047	2,345	306	7,462	743	..	..	101,326	12,413

* Includes Lend Lease

Investigation will show that there is more soap manufactured today in this country than is needed. Many small soapers are currently being forced to restrict operations because of lack of business. Yet daily, our company and many other soapers receive large inquiries for quotations for export. Europe as well as South and Central American countries including the Philippines are in terrible need of soap. Soap is next important to food and should definitely not be restricted. Many soap companies could manufacture soap for export with as little as 10 to 25 per cent fats and oils, but with continuing restrictions, they are prohibited from so doing.

IT should not be assumed, incidentally, that such sentiments as these are at all widespread in the industry. To start with, very few American soap makers do any export business, or have any substantial interest in doing any. It is only the plants located on the two coasts, in a favorable shipping position, who could share in this market in any case. One soaper, perhaps the most important factor in the export market, expressed himself as quite in sympathy with extension of the export controls, pointing out that with the United States, and the rest of the world as well, still suffering from a fat shortage, stocks of soap fats needed to supply the home market could be drained off speedily in the absence of such controls.

Neither the Association of American Soap and Glycerine Producers nor the Potash Soap Association took any stand on continuation or discontinuation of controls. So far as can be determined, each association simply confined itself to keeping track of developments in the interests of its members, and keeping them informed as to the progress of the debate in Washington over extension of the control measure.

As a matter of fact there would seem to have been little prospect that the influence of the soap industry could have made itself felt strongly in determining the outcome of this issue, as the issue has been deeply tied up with the international situation in general. It seemed apparent from the start, close observers of the Washington scene have told us, that this question of whether or not to decontrol exports and imports of fats and oils, soaps, etc., was not going to be decided by what some small segment of our national economy wanted, but rather by what might be the best course for the nation in its relations with other nations of the world. And in the final analysis the outcome of the debate was that even a Republican Congress, opposed as a matter of general principle to the idea of extension of governmental controls, was willing to grant the president the powers he sought because of the international importance of so doing. Thus for the next seven months, at least, American soapers will have to operate under the export controls, and any expansion of their export markets will be contingent upon their ability to get permission of official channels for such shipments.

The export market, as indicated above, has never added in any very substantial way to the sales of American soap makers. Through the twenties annual soap exports never reached the ten million dollar level, and through the thirties there were many years when the annual value of soap exports was only three or four million dollars. Sales in 1945 and 1946 were over twelve million a year, and currently, if controls were removed, there seems to be little doubt that sales could be jumped to fifty million dollars a year or higher. It seems logical to expect, however, that this would be strictly a temporary situation, and as fast as Europe and the rest of the world rebuilt their plants and obtained needed raw materials they would quickly revert to making their own soap.

The lack of importance of the export market to the large soap combines is due primarily to the fact that they have branch plants abroad. They made the decision long ago to manufacture in the principal countries where they expected to sell, rather than to try to export. This solution to the problem is not one that is available on short notice to the balance of the industry, particularly to the smaller concerns, and it no doubt goes a long way to explain the dissatisfaction that is currently being expressed by some few American soap makers who see themselves denied an opportunity to share in the soap export market because of the extension of government controls.

Soap Expands INDUSTRIAL USES

By Milton A. Lesser

TECHNOLOGISTS are becoming increasingly aware of the potentialities of soap as an industrial raw material. A check of the more recent technical and patent literature shows that soap is finding growing use in the solution of many problems for improving various processes, and for cutting production costs. Even in fields where it now has well established uses, soap has continued to expand its utility. Simultaneously, other industries have adapted this versatile material to a number of new and interesting applications.

Soap, of course, is a collective term, signifying the products resulting from the reaction of alkalies with fatty acids. As remarked in a previous discussion, (1) different soaps will vary in their physical and chemical properties according to the materials that went into their production. Therefore, one index of soap's growing importance in industry is the greater attention being given to the soaps made from individual fatty acids. (2) In recent years it has been found commercially practicable to separate the fatty acids present as more or less complex mixtures in oils and fats. (3) The end result has been the availability of soaps of definite and controlled composition for use as emulsifiers, wetting agents, penetrants, foam formers and as chemical reactants. This obviously, is an advance of great importance since it will permit the technician to select the soap most suited to a particular purpose.

Soap remains the premier emulsifying agent and from this property stems a large proportion of its industrial uses. Of definite interest in this connection is a series of studies on the effect of soaps on the mutual solubility of organic liquids. (4) Data presented by Palit and McBain (5) have shown how the addition of soap as a blending agent results in the mutual blending of two partially immiscible liquids. In another report, Palit (6) listed the following as some of the chief uses of soaps in organic solvents: (a) emulsification, as for example, in the manufacture of soluble oils, to be used as cutting oils, textile oils, agricultural sprays, etc.; (b) lubricating greases and oils; (c) specialty soaps, e.g. mechanics' washing soap, pine oil soap, trichlorethylene soap (Westropol soap), liquid soap, transparent soap, metal polish, leather polish, shampoo, shaving paste, etc.; (d) dry cleaning; (e) defoaming, and so on. It is evident that this list includes some of the better known uses for soap in industry.

Considerable interest continues to be focused on the role played by soap in emulsion polymerization processes for making synthetic rubber. This is not surprising in view of the statement (7) that last year about 7 per cent of the total amount of soap made in the United States was used in the manufacture of GR-S, the general purpose American synthetic rubber. An emulsifying agent such as soap is required in the manufacture of other synthetic rubbers like GR-M and GR-A.

Aside from the data revealed in a number of recently granted patents, (8-15) Semon (7, 16) has given much important information on the function of soap in the manufacture of butadiene synthetic rubber. This authority remarks that the emulsifying agent used in the emulsion polymerization process serves to solubilize the reactants. The most efficient solubilizing agents are soaps. If the polymerization is to be run at a low temperature, soaps which are fairly soluble in water are required,—namely, the myristates and oleates. If the reaction is to be performed at a higher temperature, then less soluble soaps such as the palmitates and stearates are preferable. A rather high concentration of soap is required if polymerization is to proceed rapidly. For commercial purposes, the optimum concentration is 2 to 3 per cent of the water. Since impurities may have a profound effect in inhibiting or preventing polymerization, the soaps used in the manufacture of synthetic rubber are of higher quality than the best grade soap flakes used in domestic laundering. Soap to be used for this purpose must be of the highest quality and must meet a rigid set of specifications.

Investigations on newer types of synthetic elastomers have also indicated the continued usefulness of various soaps. (17) In the meantime, work in other phases of rubber compounding and treatment has served to further extend soap's usefulness. Thus, soap is employed in a new process for concentrating latex, (18) in a method for electrolytically depositing rubber from aqueous dispersions, (19) in a procedure for making aqueous dispersions of rubber and allied substances that are especially suitable in adhesive applications, (20) and as a component of an improved lubricant for molds used in shaping rubber. (21)

FLOTATION methods for separating and concentrating have long made use of the properties inherent in soap, particularly its frothing characteristics. Newer developments in this field have called upon soap in methods for concentrating iron ores, (22-25) tungsten, (26, 27) phosphate minerals (28) and fluospar. (29) Some of these recently patented processes (23, 25, 29) have been assigned to the United States of America, as repre-

sented by the Secretary of the Interior.

Especially noteworthy is the growing utilization of soap in methods for treating oil wells to increase productivity. In most instances, soap has been used because of its chemical activity, (1, 30) but in a new method (31) for treating oil wells, its wetting properties or surface action are called into play. In this procedure, a suitable surface tension reducing agent, like soap, is forced into the sand at the bottom of the well. Carbon tetrachloride is then forced into the same part of the sand and sealed off mechanically. This treatment serves to decrease the amount of water produced by the well.

Other processes (32) for increasing the productivity of oil-bearing strata have utilized soap's emulsifying and detergent actions. Thus, to remove wax, associated occlusions and brine, the strata may be treated with a suitable emulsion, of which the following is an illustrative example:

	per cent
Sodium oleate	14.5
n-Butanol	11.5
Xylene	52.7
Sodium chloride	0.3
Sodium carbonate	0.5
Water	20.5

In another patent, (33) identical soap-utilizing compositions were recommended for preventing or removing accumulations of solid matter in oil wells, pipelines, and flow lines.

Soap has also been employed to improve the properties and efficiency of oil-well drilling muds. (34) According to a foreign patent, (35) bubbles are removed from drilling muds after the addition of stabilizing agents by the introduction of a foam-forming flotation agent, such as sodium oleate.

Not only is soap useful in conjunction with oil production, but it also finds valuable employment in the manufacture of petroleum products. One comprehensive review (36) has clearly indicated the role of soaps in the manufacture and characteristics of lubricating greases. Newer developments in this field have continued to expand soap's utility, as for example in the production of ball bearing greases (37) and other anti-friction bearing greases. (38) Especially noteworthy is the continued employment

Better and more economical segregation of fatty oils and acids is resulting in wider use of soaps tailored to industry's needs

of soap in low temperature lubricants, (39) such as are used on aircraft bearings and the like. This latter application is largely due to the fact that soap has the ability to thicken oils throughout a very wide temperature range, thereby greatly extending their application. This contributes materially to the ability of greases to be plastic at low temperatures and to have sufficient body at elevated temperatures so that consumption and leakage can be controlled. (36)

Other more specialized lubricants are also compounded with soaps. Illustrative is the use of a sodium soap in a method of preparing a valve sealing and lubricating compound resistant to the corrosive action of aluminum chloride. (40) In another case, (41) an improved gear lubricant, resistant to foaming under service conditions, is made from heavy mineral lubricating oil, sulfurized sperm oil and a small proportion of potassium oleate; the soap serving to suppress foaming. Interesting and novel is the use of various soaps for the formulation of goldbeater's lubricants. (42) According to one series of patents, (43) such lubricants are readily prepared by dissolving sodium palmitate or sodium stearate in acohol. Completely dehydrated calcium sulfate is dispersed uniformly in the soap solution and then the alcohol is evaporated.

THE lubricating, emulsifying and detergent properties of soap find extensive use in metal processing. Invaluable as an antifriction agent in drawing and pressing operations, (1, 44) a frequent constituent of cutting oils, (45) soap is often an important adjunct in compositions used to prepare metal products for finishing operations. (46) Illustrative of soap's use in this latter field is the following cleaning composition designed to remove oil, grease and foreign matter in general from metals:

	per cent
Solvent (2/3 ethylene dichloride, 1/3 propylene dichloride)	20
Soap	10
Penetrant (tar acid oil—not less than 50% tar acid)	33
Coupling agent (butyl alcohol)	8
Antifoaming agent (denatured alcohol)	6
Preservative (finely powdered rosin)	1
Blending and thinning agent (sodium bichromate)	2
Water (sufficient to dissolve the soap)	20

According to the patent, (47) such a cleaner is highly stable, requires no special equipment, is not injurious to metals, can be used cold, and is applicable either as a surface cleaner or immersion bath. Although other soaps may be used as detergents, vegetable oil soap is preferred because it dissolves readily in cold water.

An extension of soap's utility is given in a method (48) of treating metal to prevent corrosion. To achieve this end, the metal is thoroughly cleaned and is then coated with a solution containing an ordinary soap, a precipitating agent and a wetting agent. The precipitating agent is a mixture of aluminum sulfate, sodium carbonate and sodium bicarbonate. Sodium metaphosphate or hexametaphosphate may be used as the wetting agent. The solution can be applied by immersing the metal in it. On drying the metal retains a protective soap film on its surface.

Soap, of course, has a firm position in the formulation of protective and decorative coatings of the so-called water paint type. An interesting example of such utility is given in a method (49) for making a paint which is particularly suitable for coating window panes and similar surfaces.

Insoluble in cold water but readily removed with hot water, the paint consists of a solution of 0.5 per cent of gelatin in water, plus a minute proportion of mercuric chloride as a preservative. To this is added 0.25 to 1 per cent of ammonium soap as a wetting agent, 1 to 2 per cent of strong ammonia and about 10 per cent of pigment, such as lampblack or fluorescent minerals. This last recalls that soap may be used to stabilize and protect luminescent pigments, such as zinc or cadmium sulfide, from adverse effects when these materials are present in paints for outdoor exposure. (50)

THE construction industry has found soap a useful material, especially in the formation of bituminous emulsions. (51) Several investigations have shown the importance of soap in the production of bitumen aggregates such as are employed in road building and soil stabilization. Swanson (52) has demonstrated the feasibility of treating an aggregate with solutions of a heavy metal salt and a soluble soap in such a way as to provide a coating of insoluble soap which is better wetted by bitumen than by water. Such treatment yields a bituminous road matte that is better able to resist the stripping action of water. Road-emulsion studies (53) in England have established that potasium soap-emulsified emulsions dry more rapidly than those made with sodium soaps, especially at low temperatures. A patented procedure (54) for soil stabilization and impermeabilization utilizes soap to emulsify asphalt.

The production of insulating materials also makes use of soap. In one instance, (55) a fireproof insulating composition is prepared from a paste and a strong and light weight mortar; an ammonium stearate soap comprising the major constituent of the paste. Quite different is the employment of a soap solution to emulsify an isoprene resin for the production of resilient insulating batts. The treatment, which improves abrasion resistance, is particularly applicable to glass fiber, mineral-wool, rock-wool or slag wool. (56) Also indicative of the adaptability of soap is a method (57) for making calking compounds. In this instance, a mixture of sodium oleate and casein serves as the dispersing agent for a polyvinyl acetal to form a dispersion in water containing from 45 to 75 per cent solids.

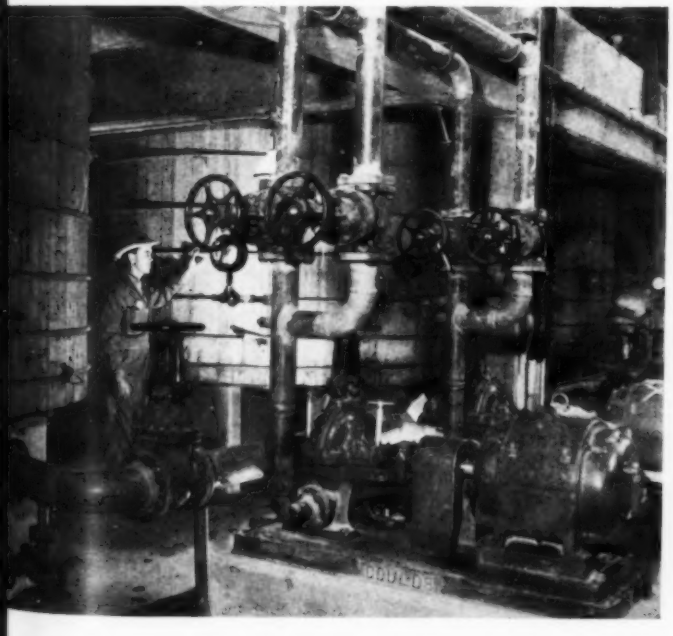
The textile industry is one of the largest consumers of soap, and recent publications (58) continue to stress its importance in this field. Soaping, of course, is a key step in preparing cloth for printing, (59) but newer investigations have shown that soap may have important influences on the dye itself. (60) In this connection there may be cited the work of McBain and Green, (61) who found that extremely dilute soap solutions, especially in the presence of salt, exhibit a powerful suspending action for minute particles of dye; an action quite distinct from its solubilizing effect.

Treatments to impart certain desirable properties to fabrics have found soap a useful material. Several processes (62, 63) have been developed in which cellulose derivatives, especially pile fabrics, may be given a wool-like character by boiling them in soap solutions. Illustrative is a method (64) by which flat filaments of cellulose pile fabrics are given the granulated appearance of animal pelts (e.g. lambs wool or sheepskin) by crinkling without tension by boiling in an aqueous solution containing 2.5 Gm. of soap per liter, for two to four hours. This treatment gives a soft pile with a dull finish. Soap has also found employment in a process (65) for shrinking wool-acetate fabrics and imparting a soft feel to them.

In another approach (66) to creating matte effects on lustrous fibrous materials, without imparting a harsh feel, the fabrics are treated with a preparation containing soap, one of several hydrocarbons or similar materials, a white pigment and coagulable fixing agent like albumen and casein. After this product is applied to the fibers and the fixing agent is coagulated, the material is given a soaping as the final step.

In making fabrics waterproof, it has long been common practice to impregnate the material with an aluminum salt solution and then with an aqueous solution of a soluble soap. This results in the formation of an insoluble, water-resistant aluminum soap in the fibers. In a new method (67) for waterproofing textiles, the fabrics are impregnated with an aqueous colloidal suspension of a zirconyl soap. This suspension is made by adding an aqueous solution of a zirconyl salt to an aqueous solution of sodium carbonate or a similar carbonate and mixing this alkaline solution with an aqueous solution of a water-soluble soap.

In passing, it may be mentioned that, during the war, Army uniforms were impregnated with insect repellent



Soap solution for the emulsion polymerization of synthetic rubber is stored in wooden tanks at the Institute, West Va. plant of U. S. Rubber Co., New York. The nation's peak wartime production (1945) used about 57,500 long tons fatty acids derived from soap; 1947 consumption for rubber production is gauged at 35,000 long tons.

emulsions, made with soap, as a protection against chiggers and mites. In New Guinea, the U. S. Army used dimethyl phthalate, this being employed in 5 per cent emulsion in 2 per cent laundry soap solution in which the clothing was dipped. Benzyl benzoate, or an equal admixture of this agent with dimethyl phthalate in aqueous emulsion with soap was also used. (68)

THE paper industry is also becoming cognizant of the usefulness of soap, especially as a sizing agent. In British investigations (69) on 100 per cent Kraft pulp, rosin-alum sizing was replaced by soap-alum sizing in a test run. These experiments proved that soap can be used successfully as a sizing agent. The finished soap-sized paper appeared normal in every way and no "soapy feeling" could be detected. The feasibility of using soap for this purpose is indicated in a recent patent (70) where it is suggested that wax and natural and synthetic resins with soap may be substituted for rosin in making paper size.

The emulsifying properties of soap have also been used for treating paper stock. In this case, (71) resins are removed from virgin pulps and inks from waste paper by admixture with a water-in-oil emulsion, consisting of kerosene, an emulsifier like sodium or potassium oleate, an electrolyte, and certain organic acids. The mixture is then treated with alkali to a pH above 7. This changes the emulsion to an oil-in-water type which contains the ink or pitch and from which these materials are easily removed by washing.

By an adaptation of ore flotation methods, soap has become a valuable factor in recovering useful materials from the "white" water of paper mills. (1) Similar effects may be achieved, not only with white waters, but also with other industrial waters by means of soap-containing agglomerating compositions described in two patents. (72) The first of these patents describes the preparation of agglomerating solutions consisting of approximately 1 per cent animal glue in water brought to a pH of 4 to 6 by adding alkalies. To these solutions is added 3 to 12 per cent (based on the weight of glue) of commercial soap or similar materials which act as adjunct coalescing agents. Alternatively, the materials may be mixed directly, as in the following example:

Animal glue	100 lb.
Rosin size or mildly alkaline soap	10 lb.
Caustic soda	3 lb.
Water	1200 gal.

The second patent covers similar soap-utilizing compounds based on glue treated with a reactive chromium salt. The applications of both types of preparations are essentially the same. Thus, in paper making, the addition of an agglomerating solution to the dilute fiber-filler suspension serves to tie in the fine and coarse fibers and fillers so that there is increased retention on the paper-forming medium, such as the Fourdrinier wire. Such addition promotes a more even formation of a stronger, faster-draining sheet, with minimum recirculation of white water.

These agglomerating solutions may also be used in other industry for the separation of solids from liquids. They are recommended for the treatment of process waters, raw waters, coal mine wastes, distillery wastes, sewage, tannery wastes, and in other instances where the recovery of suspended solids or the clarification of turbid waters for re-use is desired or where prevention of stream pollution is important.

SOAP has had a number of uses in connection with adhesives. For example, it is sometimes employed in compositions to prevent the sticking of adhesive rolls and sheets. Such application has been extended in newer methods. (73) Very interesting, however, is the growing use of soap as a direct component of adhesives. (74) Illustrative is an adhesive composition (75) consisting of:

	per cent
Bentonite	60
Rubber latex	25
Magnesium chloride	10
Water-soluble soap	4
Preservative	1

In another process, (76) up to about 1 per cent of ammonium laurate, potash cocoanut oil soap or other specified foaming agent is added to the usual silicate adhesive employed in the manufacture of laminated paperboard. This addition causes the silicate to dry in a friable, porous mass instead of the hard, solid structure which is difficult to remove from the platen.

In addition to its use in the preparation of wax emulsions to improve the appearance and protect fruits and vegetables from injury and decay, (1) soap has also found employment in special cleaning and disinfecting washes for such food products. (77) In one method, fresh fruits and vegetables are prepared for shipment to market by scrubbing and soaking in an aqueous solution containing soap and sodium carbonate as detergents, sodium ortho-phenylphenolate as a disinfectant, and sufficient tetrasodium pyrophosphate to maintain the pH above 10. The surface solution is rinsed off, but blemishes and decay are penetrated permanently, serving to "immunize" the product against further spoilage.

Soap has also been used as a suspending agent in spray compositions containing organic plant protectants. (78) Of kindred interest are smoke screens which, turning from their war uses, have already found important applications in forming insulating blankets to protect late maturing sugar cane from frost. Other, similar applications for smoke screens for protecting crops are quite feasible. Noteworthy therefore, is the fact that a preferred smoke screen formula used by the Army contained sodium stearate as an important ingredient. (79) Similar smoke screen compositions have been patented. (80).

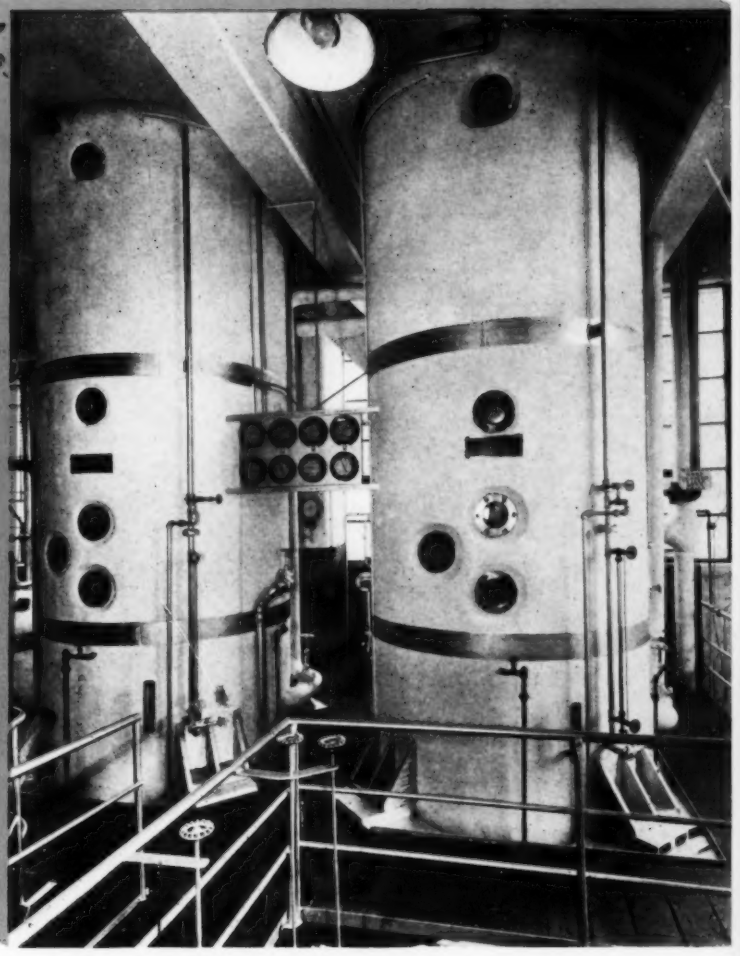
The use of soap as a spreader and emulsifier in insecticidal compositions is a story in itself. (81, 82) It is interesting, however, to note that soap has found a number of uses in connection with DDT. (83, 84, 85) It will doubtless find utility in conjunction with some of the newer insecticides.

Before concluding, mention should be made of soap's uses in the field of plastics and resins. Useful as a lubricant in the cutting and machining of certain plastics, (86) soap has also found application in the prepara-

(*Turn to Page 152C*)

GLYCERINE

A view of its history, chemical and physical properties and its importance to industry



A modern double-effect Wurster & Sanger evaporator for recovering glycerine from soap lye.

By N. N. Dalton*

GLYCERINE is an essential commodity that is literally used by man from the "cradle to the grave." It helps to ease us into the world, to lubricate our way through life and to embalm us when we depart. The daily round of modern living is continually dependent on products in which glycerine is either present or has been used in their preparation.

Nature, unwilling to leave the production of glycerine solely to man's initiative, has equipped the human metabolism with a per capita producing unit of about half an ounce per day. Nature has also provided animal and plant metabolism with the capacity to produce glycerides in large quantities from the materials on which they live and grow and to produce sugars, yielding in the natural course of fermentation, a small percentage of glycerine.

To the technologist, glycerine is an ever present help in time of trouble, but its behaviour occasionally seems eccentric. For instance a 10% aqueous solution freezes at the same temperature as a 90% solution, and a 66.7% solution freezes at minus 51.7 degrees Fahrenheit, while pure glycerol freezes or crystallizes at plus 62.6 degrees. Although miscible with water in all proportions, the efficiency of its ordinary distillation procedure depends on its physical separation from steam. While it is one of the best known and most widely used solvents, some of the chemical combinations of glycerine are practically insoluble. Glycerine's physical properties as a humectant, plasticizer, lubricant, and solvent and its viscosity, permanence, stability to oxidation, non-toxicity, sweet taste and antiseptic properties, carry it into a wide diversity of industrial and edible products.

The chemical properties of glycerine are unique. As a tri-hydric alcohol it is possible for either one, two, or three of the hydroxyl groups to react with a given reagent. It is also possible for each of the three groups to react with a different substance to produce compounds of a mixed type. It can form esters, ethers, inner ethers, acetals, amines, halohydrine, and metallic derivatives and can also be oxidized reduced, dehydrated, and undergo various special reactions. Among the important esters of glycerine are the alkyd resins, ester gums, nitro-glycerine, acetins, and long chain fatty acid derivatives. Some monoglycerides have recently attracted considerable interest as homogenizers for foods, fats, and also for industrial products. Notwithstanding the fact

* Based on a talk before the Midwest Regional Meeting of the AMERICAN CHEMICAL SOCIETY, Kansas City, Mo., June 24, 1947.

that glycerine can react chemically to form so many widely diversified compounds, it is sufficiently stable under ordinary conditions to be used for the sake of its physical properties without fear of chemical complications.

The above summary of glycerine's chemical and physical properties and this review of its uses may warrant the conclusion that because of its penetration into so many basic industries, its current consumption is as good an index of industrial activity as many of the statistical charts furnished by various economic services.

HISTORICALLY, the commercial production and consumption of glycerine originated in its isolation from glycerides by Scheele, the Swedish chemist, in 1779; its study by Chevreul in 1813; and its later identification as a tri-hydric alcohol by Berthelot, Pelouze, and others from 1813 to 1836. In 1846, Sobrero reported the reaction of glycerine with nitric acid to form nitro-glycerine, and from 1862 to 1865 the Nobels had succeeded in converting this product into the safer and more usable form of dynamite. At about the same time the Societe Francaise des Glycerines, seeking to overcome the industrial hazards of high temperature and humidity required to prevent breaking of delicate textile threads, found that direct treatment of the threads before weaving corrected many of these difficulties, and this new development quickly spread through the French textile industry, as well as to other countries. Perkins' work with synthetic dyes, beginning with the discovery of mauve in 1856, led to the use of glycerine in printing pastes and finishing materials, which are today one of glycerine's principal uses in textiles.

Pursuing this history into one of the largest present day uses of glycerine, namely, ester gums and alkyd resins, it may be noted that in 1847, Berzelius reported a resinous product obtained from the combination of glycerine with tartaric acid, and von Bemmelin, in 1856, described similar reactions of glycerine with succinic and citric acids. While Watson Smith recorded its reaction with phthalic anhydride in 1901, it is only within the past fifteen years that the potentialities of the glycerine phthalate types of resin in protective coatings have been fully recognized. Hence, it is plain from the record that in the case of both nitro-glycerine and the alkyd resins, nearly one hundred years elapsed before the original laboratory products found their way into commercial application, and although most of our glycerine comes from soap making, soap was known 2000 years before chemistry isolated and identified glycerine. This should be of some solace to the research chemist, who may become depressed when his best flowers are so slow to bloom, but it must be remembered that it is much easier to discover a new laboratory product than to find a use for it.

Alfred Nobel believed that nitro-glycerine would make war impossible as being too terrible for the human mind to endure, and this belief led to his founding of the Nobel Peace Prizes. It is evident by now that he miscalculated the ingenuity of the human race in attempting to destroy itself. Unfortunately, for Nobel's hopes, nitro-glycerine, although its peacetime and constructive uses are very great, has been one of the chief implements of destruction in all wars since its discovery and adaptation. Toward the end of World War II, it was being used in the United States alone to the extent of about three million pounds per month as a principal component of rocket powder, and at the end of the war, new plants were being completed to greatly expand this production.

SINCE practically all of the world's commercial glycerine production comes from the fat splitting processes, it becomes imperative, in war time, to conserve fats for foods and also for the production of glycerine. With long duration of hostilities and increasing shortages of fats, the glycerine reserve stocks become depleted, and in the last war, household fat salvage became a government sponsored project, glycerine was drafted for war uses and its civilian uses were, in most instances, either entirely prohibited or drastically curtailed. Butter had to be traded for guns and lipsticks for explosive.

As we progressed into World War II, the War Production Board released a statement to the effect that "glycerine compounds rank second only to alcohol as a solvent in medicinal solutions" and cited other non-explosive needs, such as "antiseptics in surgical dressings; emollients for the treatment of throat and teeth disorders; protective coatings for ships, planes, and motor equipment; cellophane for food packaging and in army capes as protection against mustard gas; wrapping and protection of ordnance shipments; etc." Glassine and greaseproof papers in which glycerine was used were restricted entirely to food packaging and ordnance.

In this statement glycerine was also described as "irreplaceable in gun recoil mechanisms, in hydraulic control and other equipment, in ship steering gear and compasses, and in protective coatings for ship parts and guns." Glycerine was either denied or placed under drastic allocation for such civilian uses as cosmetics, tobacco, dentifrices, lotions, beverages, flavors, candy, chewing gum, beverage crown caps, soaps, hair tonics, shampoos, and for civilian protective coatings. Full usage was, however, allowed in some civilian food products.

Naturally, during any war emergency, many attempts are made to secure glycerine or substitutes from other sources. Since glycerine is a natural product of the fermentation processes, an effort to recover glycerine by fermentation becomes common practice. Germany was reported to have produced 2,000 tons of glycerine per month from sugar beets during World War I. Italy started a large rice fermentation plant at Milan during her Ethiopian campaign, and shortly before the last war, South Africa claimed to have a sugar fermentation project in operation. One of our largest domestic chemical producers, after World War I, built a trial fermentation plant for glycerine production, but later abandoned it.

During World War II, a leading domestic distiller tried to recover glycerine from distillery wastes, but the difficulties encountered were reported as somewhat discouraging.

(*Turn to Page* 139)

New Federal Spec for

PAINTED SURFACE CLEANER

New requirements call for performance tests which, although empirical and involving considerable set-up, offer to the industry useful means of comparison

A NEW Federal specification for a painted surfaces cleaner containing synthetic detergent was recently released to the industry. The new specification, P-C-431, represents the initial attempt on the part of the technical committee on detergents, Federal Specifications Board, Bureau of Federal Supply, U. S. Treasury Department, Washington, to establish requirements for procurement of synthetic organic detergents, and permits acceptance of a wide variety of commercial products. A survey of the industry on the part of the committee indicates that the specification has the concurrence of most synthetic detergent manufacturers. Aside from certain chemical and physical properties which limit to some extent the type of ingredients used in formulating the commodity, the specification also includes laboratory scale cleaning efficiency tests and limitations on amount of deleterious effect upon painted surfaces.

The new specification is based essentially upon the Navy Department specification 51-C-20, used successfully during the war in the procurement of many thousand pounds of synthetic detergent and synthetic detergent compositions and offers promise as an acceptable standard for industry as well as for Federal service. Copies of the specification are available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

A number of points regarding the new specification are of interest: The cleaner may be in powder, flake, liquid, or paste form but must be uniform, homogeneous and free from objectionable odor and consist essentially of synthetic organic detergents. It shall contain no abrasives or fatty acid soaps and shall not be irritating to the skin.

The cleaner shall be satisfactory for use in soft, hard, or sea water and not lose effectiveness or deteriorate when stored in a closed container at normal temperatures. The pH value of a 1.0 per cent distilled water solution (by weight) of the cleaner shall be not less than 5.5 nor more than 10.0 when tested as described in the specification. (The pH test, as described in the spec uses a pH meter with glass electrode with a 1% solution of the cleaner and no correction is made for sodium ion concentration). The cleaner must be completely soluble, when in a 5% solution with distilled water at 25° C., after 5 minutes of vigorous stirring, and must be free-rinsing when tested with synthetic sea water as described in the specification.

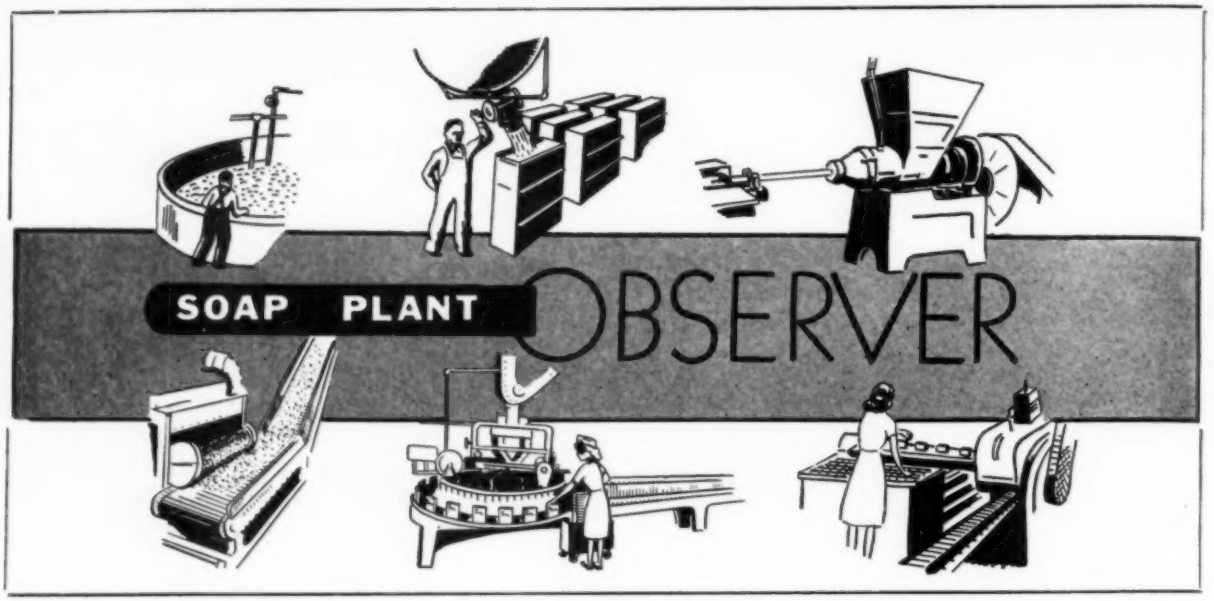
The requirement regarding deleterious action on painted surfaces states that a 0.2% (by weight) solution of the cleaner shall not cause greater than one-half the loss in specular gloss of painted surfaces caused by a 0.2% solution of trisodium phosphate, when tested as described in the specification. The cleaner is also expected to measure up to a cleaning efficiency of not less than 80% in distilled or sea water when used against standard soiled panels as described in a cleaning efficiency test.

The cleaning efficiency test measures the ratio of the reflectance of unsoiled, unwashed, painted panels to the reflectance of soiled, washed, painted panels and takes considerable amount of apparatus preparation for the specular gloss measuring set-up and the washability apparatus.

The equipment used in washing the soiled, painted panels is essentially a windshield wiper attached to a wooden-based board covered with tin plate. To the end of the wiper arm is attached a small box containing a sponge. In operation, the panel is held in position and the sponge passes over its surface, washing it with the detergent. The test is empirical but appears to lend itself well to successful duplication.

The painted panels are soiled by a standard soiling mixture composed of metallic brown (Fed. Spec. TT-M-251), kerosene, carbon tetrachloride, liquid petrolatum, lubricating oil, and hydrogenated vegetable shortening.

Material conforming to the requirements of this specification is intended for use in cleaning operations that require a non-abrasive cleaner, which will exhibit no harmful effect to the surface to be cleaned or personnel. Typical uses are in removing oil, grease, and occupational soil from painted surfaces, and in general soil removal by application from solution with a cloth, sponge or brush, using either soft, hard or sea water. The material is not intended for use on aircraft surfaces.



DURING the serious soap shortage of last year, a great many suppliers of cleaning materials rushed out synthetic detergent products to fill the gap in the market. Synthetic detergents as such and mixed in all sorts of proportions with all kinds of builders, fillers and diluents, were recommended by these suppliers for most every cleaning job under the sun. As has been pointed out many times in this publication and elsewhere, some of these products are excellent and will stand the test of time and keen competition and take their places along with soap as useful cleaning products for the housewife and valuable detergents for industrial and institutional use.

A number of the better products which still survive, have been given somewhat of a "black eye" however by the poorer ones, which are now daily dropping out of the market. The poorer products were rushed to market with quick turn of profit as the principal motive for their existence and have been recommended for every cleaning job imaginable in order to bring increased volume. As the synthetic detergent suppliers progress in their experience with a household consumer product, they are finding out that not only does the chemical makeup of a synthetic play a major role in determining its various applications, but also the types of chemicals used as builders greatly affect the synthetic's efficiency in various media and for particular purposes.

This is not new information to the basic manufacturers of synthetic detergents who for years have published considerable data on the best uses and formulations for their products. It is felt that the idea that "most anything will sell in a seller's market" rather than technical ignorance was the main reason for poor formulation of many of these synthetic products.

One of the biggest complaints has been that the suppliers have been loading the products with chloride and sulfate salts to the point of greatly decreasing the efficiency of the synthetics. We have received a number of letters asking why such extraordinary materials, which are not common as soap builders, should be used. Some people, long experienced technically in the soap industry (where chlorides and sulfates are not considered "builders" of detergent value but rather as poor adulterants) have pointed out that salt has no place in a detergent and the use of chlorides and sulfates as fillers for household synthetics should be completely discouraged.

The truth probably lies somewhere in between these two extremes. When one is considering marketing a new detergent to the household or even to the industrial trade, the selection of the type as well as the amount of builder in the formulation should be arrived at by a careful perusal of the technical literature followed by a thorough testing program in the laboratory or on the washstand. There is considerable reference in the literature to the intelligent use of sulfates and chlorides to enhance the cleaning power of synthetic detergents. This cleaning power involves a number of physico-chemical properties such as wetting, dispersing and emulsifying power, which are all tied rather closely to the chemical and structural makeup of surface-active agents, (although surface activity is not necessarily correlated with wetting ability). There is plenty of evidence that electrolytes, *within certain ranges of concentrations*, will lower surface tension, increase foaming power and bring to a maximum the emulsifying power of *certain types* of synthetic detergents.

ALKYL aryl sulfonates are salts of strong acids and in very weak solutions, they tend to go into true solution rather than exist as colloidal micelles. It is quite possible that additions of small amounts of electrolytes such as sodium chloride or better, sodium sulfate, will cause sufficient molecular aggregation to bring the detergent particles into the colloid size forming what are known as "association colloids," in which case the washing action of the detergent would be

considerably improved. In launderometer tests with 0.4% concentrations of "Nacconol NR," a detergent of the alkyl aryl sulfonate type, on soiled wool, small amounts of sodium sulfate (replacing up to 80% of the sulfonate) markedly improved the detergent power of the synthetic. (Lawrence Flett, *Chem. & Eng. News, 20,* 13, July, 1942). However, in washing problems. where heavy soiling is involved, a relatively strong solution (up to 0.4%) of synthetic should be maintained.

J. Powney and Wood reported in 1940 (Trans. Faraday Soc. *36,* 420) the improvement in the detergency of sulfated alcohols such as cetyl and lauryl sulfate when neutral salts were added to the solution.

The addition of small amounts of electrolytes may also increase the *wetting power* of a synthetic detergent. Although there is no direct relation between surface tension values and wetting power, as measured by the Draves test, for practical purposes rapidity of wetting is accomplished by solutions the surface tension of which is below 35 dynes per centimeter. Wetting agents of the sulfosuccinate type are aided by small additions of sulfates and chlorides. In fact additions of as much as 20% by weight of sodium sulfate will enhance the wetting power of an agent like "Aerosol IB" (not generally used with textiles). This agent will produce an emulsion of oil or grease with water more easily when using 20% sodium sulfate in the water phase, than when using ordinary water. It also has greater foaming power in the presence of sodium sulfate. In general the addition of electrolytes to these types of synthetic wetting agents is beneficial up to certain concentrations, and adverse at higher concentration. The higher molecular weight members of the Aerosol series, for example, will tolerate and are usually benefited by low concentrations of electrolytes, whereas the lower molecular weight derivatives will be benefited by greater quantities of electrolytes.

In an alkyl aryl sulfonate of reasonably high molecular weight such as "Santomerse-1 or -3" (2-decyl benzene sodium sulfonate-1), which is anion-active, it has been pointed out that whereas electrolytes such as sodium sulfate and chloride tend to increase the surface activity and lower surface tension; actually there is a slight *decrease* in detergency in the presence of sodium sulfate when the tests are run with the launderometer in hard water. (Jay C. Harris, ASTM Buls. 140 & 141, 1946. Reviewed in *Soap & Sanitary Chemicals,* in the May 1947 issue, page 69).

There are technical grounds for properly "building" synthetic organic detergents with sulfates, but — don't overdo it.

Harris writes "Comparison of the activity of Santomerse No. 3 (99% active) and Santomerse No. 1 (40% active, 60% builder) illustrates the interesting and valuable effect produced by the addition of sodium sulfate—also sodium chloride—to surface-active agents. Surface activity is increased by addition of sodium sulfate. This effect may be attributed at least in part to orientation of the surface-active agent at the interface. Presence of sodium sulfate decreases wetting ability, however."

Commenting on performance tests of detergency with the launderometer, on the other hand, he states: "When Santomerse No. 3 is compared with No. 1, the presence of sodium sulfate appears to decrease detergency slightly." This test was run on hard water but when soft water tests were run under the same test conditions, Santomerse No. 1 showed a little better detergency than did No. 3, pointing out that the presence of the sulfate ion where it is not sequestered by calcium increases surface activity.

The addition of neutral electrolytes to a detergent of the modified alcohol sulfate type (such as "Alrosene 31") will improve its work on woolens but not on cottons where alkaline builders are more effective.

According to Young and Coons, in the case of such compounds as alkyl sulfates and fatty acid derivative sulfonates, the detergent action is improved by the presence of 10 to 50% by weight of neutral salts and many commercial surface-active agents contain about 50% of salt in the marketed form. (*Surface Active Agents,* page 246, Chemical Publ. Co., Brooklyn.)

Sodium sulfate apparently has some value as a builder for the cationic-active type of synthetic detergents. The work of J. A. Hill and C. L. F. Hunter published in *Nature,* 158, 585, and summarized elsewhere in this issue points out that small quantities of sodium sulfate produced a maximum lowering of surface tension of water by cetyl trimethyl ammonium bromide. Hill and Hunter used a concentration of 0.0025% of the cationic in a 0.01 Normal sodium sulfate solution to achieve a maximum lowering of surface tension, while in the absence of sodium sulfate a concentration of 0.015% cationic was necessary to get the same effect. This means that the ratio of builder to cationic to achieve the maximum lowering of surface tension was about 71/25 and that without the builder, the concentration of cationic had to be increased sixfold.

These findings in the technical literature are not offered as an excuse for the trade to bulk a synthetic detergent product with an excess of builder, for there are many other considerations that apply during the practical use of a product on the washstand that are not part of the problem being studied at the test-tube stage. They are offered, however, to point out that sodium sulfate as a logical electrolyte builder for synthetic detergents has considerable scientific grounding. It should of course be intelligently used in proper quantities, and it is only under certain conditions and with certain agents that it will serve to increase the efficiency of a detergent. Such a conclusion is no basis for the indiscriminate loading of a commercial, all-purpose synthetic detergent type cleaner with sulfate or chloride.

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TRADE NEWS. . . .

Duke To Tennessee Soap

Raymond A. Duke, associated with the Kirkman Division of Colgate-Palmolive-Peet Co. for the past thirty years, joined the Tennessee Soap Co., Memphis, on August 15 as plant superintendent. Mr. Duke at the time of leaving C-P-P was production supervisor at the Kirkman plant in Brooklyn, N. Y. He joined Kirkman & Sons in 1917, prior to its acquisition by C-P-P, as an analytical chemist, moving up through the production department and being appointed assistant superintendent in 1931. He has specialized in laundry soap production, particularly powders and granulated products. Mr. Duke was appointed plant superintendent for Tennessee Soap by Selden Humphreys, president of the company.

Lever Acquires Ayer

Harriet Hubbard Ayer, Inc., New York, one of the oldest companies in the United States making cosmetics, toilet preparations and perfumes, was acquired in July by Lever Brothers Company, Cambridge, Mass. The entire capital stock of the New York cosmetic firm was transferred to Lever Brothers Company but Harriet Hubbard Ayer, Inc., will continue to operate as a separate and independent unit of Lever Brothers.

Ralph P. Lewis was named by Lever Brothers as president of its new subsidiary. Since January 1945, Mr. Lewis has been associated with Elizabeth Arden Sales Corp., New York, as general sales manager, and subsequently vice-president in charge of sales. Prior to that, he was sales manager of the western division of the American Bank Note Company, having joined that organization upon leaving the University of Chicago where he was a member of the class of 1926.

Mr. Lewis succeeds Mrs. Lillian S. Dodge who became president of Harriet Hubbard Ayer, Inc. in 1918 upon the death of her husband, B. B. Thomas, principal incorporator and

RALPH P. LEWIS

president of the company at that time. Mrs. Dodge will, however, continue to be identified with the business in an advisory capacity to Mr. Lewis.

The Harriet Hubbard Ayer Co. was incorporated in New York in 1907. Through the years it expanded into one of the largest cosmetic firms carrying an established line of approximately 200 products. A subsidiary corporation, Harriet Hubbard Ayer Laboratories, Inc., which was also acquired by Lever Brothers Company in the transaction, was chartered in New York in 1939. Mrs. Mary S. Thomas, daughter of Mrs. Dodge, is president of the subsidiary and also vice-president of the parent business.

Acquires Cosmetic Line

Katherine Martin, Inc., New York, has just taken over the "Milky Way" cosmetic line, formerly of Coldwater, Mich. The company has opened offices at 118 East 28th St., New York. Officers and directors are Miss Katherine Martin, president; Dr. Henry Goldschmiedt, vice-president; and Helen Lind, secretary-treasurer.

Ackley Joins Hundut

Robert R. Ackley recently joined Richard Hudnut, New York, as director of research, it was announced by the company in mid-July. Mr. Ackley was formerly the director of the industrial division of Onyx Oil & Chemical Co., Jersey City, N. J., in charge of development of emulsifying agents, wetting agents and antiseptics, and an advisory fellow at Mellon Institute. He will be responsible for cosmetic research and development activities of the William R. Warner—Richard Hudnut Co.

Acquires Tech Soap

Harold L. Aronson, former vice-president and general sales manager of U. S. Sanitary Specialties Corp., Chicago, acquired from C. R. Willey, the Tech Soap Co., Chicago manufacturers of vegetable oil soaps and chemicals. The organization will operate under the new name of Tech Soap Manufacturing Co., marketing its products to the jobbing trade. Associated with Mr. Aronson, president of the organization, are Alfred C. Aronson, vice-president, and Harold L. Aronson, Jr., secretary-treasurer, also previously associated with U. S. Sanitary Specialties Corp. Mr. Willey is retiring from the soap business.

deNavarre Co. Sold

Maison G. deNavarre Associates were acquired by Beauty Counselors, Inc., July 1st, as a part of their manufacturing subsidiary, Cosmetic Laboratories, Inc., Detroit. Mr. deNavarre joins Beauty Counselor as vice-president and a director, and also as vice-president in charge of manufacturing and research of Cosmetic Laboratories, which is expected to be in full production in about two years. Beauty Counselor products are sold directly to the consumer by women trained as "counselors."

INSECTICIDE SPRAY PERFUMES AND DEODORANTS

SPRAY

manufacturers will want a copy of this handy folder which has been designed to facilitate their selection of odorants best suited to each of the various toxicants now employed. Its title is: "INSECTICIDE SPRAY PERFUMES AND DEODORANTS" . . . and it is FREE for the asking. Listed and briefly described are a number of perfumes and odor masks which we have selected for their range of application, effectiveness and economy. Included data indicates amount of compound recommended for each type of insecticide. Write for a copy of this folder . . . it may point the way toward improvement of your spray products through the use of better and more appropriate

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INSECTICIDE SPRAY PERFUMES AND DEODORANTS

New Synthetic Detergent

A new synthetic detergent was recently announced by Monsanto Chemical Co., St. Louis, and Westinghouse Mfg. Co., electric appliance division, Pittsburgh, to be introduced nationally for users of automatic home washers. The new detergent, called "All," is said to work equally well in conventional washers although a larger amount is required than in the automatic washers.

Cream Shampoo Use Gains

Although liquid shampoos continue to rank first in popularity, the use of cream shampoos has doubled, according to the Fawcett Beauty Readers' Forum Study of Hair Preparation for June 1947. Of the 1,175 women participating in the study, 26.5% now use cream shampoo as compared with 12.8% in 1946. Liquid shampoo is used by 72.5% as compared with 80.5% in 1946. The study also indicated a trend toward more home care of the hair. Drug stores lead as the favorite place of purchase of shampoos. It was also determined that greater sales volume occurred in dime stores and grocery stores than in department stores.

C-P-P "Vel" Promotion

Colgate - Palmolive - Peet Co., Jersey City, N. J., is offering Chicago housewives a "special" on its new synthetic detergent, "Vel." With each purchase of one package at regular price a second package may be obtained at half-price. If not satisfied after trial, the buyer may return the unopened package to the manufacturer, who guarantees to refund the dealer's regular price, plus postage. The offer is good until Dec. 31, 1947.

DCAT Fall Meeting Plans

The 57th annual meeting and election of the Drug, Chemicals and Allied Trades section of the New York Board of Trade will be held in conjunction with its golf tournament, Thursday and Friday, Sept. 25-26 at Shawnee Inn, Shawnee-on-Delaware, Pa. Dr. Carle M. Bigelow, chairman, announced the following members will serve on the nominating committee: Harold M. Altshul, Ketchum & Co., chairman; Guy L. Marsters, Norwich Pharmacal Co.; S. B. Penick, Jr.; S. B. Penick & Co.; E. T. T. Williams, Becton, Dickinson & Co.; and Victor E. Williams, Monsanto Chemical Co. Detailed plans for the fall meeting had not been announced at press time.

M. L. Westering (left), head of the soap department, Swift & Co., Chicago, displays 25 year service pin of the American Meat Institute to E. A. Moss, vice-president of Swift, who presented the pin on June 27th. Mr. Westering joined Swift in 1922 and since 1941 has supervised industrial and consumer types of soaps and cleaners.

New Kranich Soap Prices

A new price list was recently issued by Kranich Soap Co., Brooklyn, effective July 1st, listing the company's products into three major soap categories—maintenance, pharmaceutical and cosmetic. Soaps on the Kranich list are priced on the basis of concentration and percent of anhydrous material. The company defines "concentrated" as meaning "pure soap and glycerine," and "anhydrous" as meaning "pure soap only."

AOCS To Meet in October

Plans are now being made for the annual fall meeting of the American Oil Chemists Society to be held at the Edgewater Beach Hotel, Chicago, Oct. 20-22, 1947. Howard C. Black, Swift & Co., Chicago, will be program chairman in charge of technical papers.

"Drene" to Compton Adv.

Advertising of "Drene" shampoo was turned over to Compton Advertising, Inc., New York, in mid-June, by Procter and Gamble Co., Cincinnati, manufacturers of the product.

Allow Export Increase

Supplemental export allocations on oils and soaps were authorized at the end of June by the U. S. Department of Agriculture. The allocations allow 1,100,000 pounds of edible tallow for Switzerland; 1,200,000 pounds of castor oil for Netherlands, and 1,543,500 pounds for Canada. Allocations to Haiti authorize 250,000 pounds of laundry soap (95,000 pounds fat content) to cover a quantity of coconut oil foots lost by Haiti as a result of an exchange of their copra allocation to the United States for coconut oil. Austria gained 5,986,800 pounds of laundry soap which was transferred to commercial allocation.

Leeds in New Quarters

Leeds Chemical Co., Baltimore, is now located in its new general offices and plant at 604-618 Portland St. Formal opening of the new quarters occurred July 14.

Chicago Toiletries Show

The annual tradeshow of the Chicago Toiletries Salesmen's Association will open Sept. 8 for a week's run at the Palmer House, Chicago. Exhibits will be concentrated on one floor this year. Space was completely sold out early in July, it was announced. J. J. Hannon of Houbigant, Inc., is president of the organization; R. S. Edwards of J. V. Pilcher Mfg. Co., is vice president and W. R. Tenney of Lentheric, Inc., is secretary-treasurer.

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AMCO's new package design features maximum name visibility and family resemblance. The newly designed packages were recently placed on the market by AMCO Chemical Corp., San Francisco manufacturers of automotive chemicals, to coincide with the launching of a sales and merchandising campaign.

London Chemical Congress

Over two thousand chemists from all over the world attended the eleventh International Congress of Pure and Applied Chemistry held in London, July 17th to 24th. Official delegates appointed to the Congress numbered 1600, mostly representing Great Britain, France, Italy, U. S. A., the Scandinavian countries and Switzerland. A number of papers were presented that were of interest to soap and sanitary chemicals manufacturers. Two papers applying to perfuming were: "The Synthesis of Analogues of B-Ionone" by E. R. H. Jones and R. W. Richardson, United Kingdom, and "Chemical Aspects of the Ageing of Essential Oils, especially Citrus Oils and the Maturing of Perfume Mixtures" by H. J. Strausz.

In the insecticide field were: "Toxicity of DDT" by G. R. Cameron; "Modern Insecticides" by F. P. Coyne, E. Holmes and J. S. Steward; "The Mode of Action of DDT on Insects" by P. Lauger; "Physico-chemical Factors involved in the Large Scale Applications of DDT and their Significance in Connection with Insecticide Research", W. A. Waters; "The Mode of Action of Chlorinated Hydrocarbons", H. Hurst, United Kingdom; and "Relations between Chemical and Insecticidal Properties among Chlorinated Hydrocarbons and Organic Phosphates", H. Martin, United Kingdom.

A paper on fumigation titled: "Some Recent Developments in the Principles of Fumigation" was presented by A. B. P. Page and O. F. Lubatti of the United Kingdom. "Use of a New Class of Quaternary Ammonium Disinfectants" was presented by J. C. L. Resuggan and J. G. Davis. No papers on soap-making as such were listed, but of interest might be: "The Absolute Velocity of Contact Catalysis", G. M. Schwab, Greece; "Dynamics of Selective Catalytic Autopoisoning," F. H. Constable, Turkey, and "The Thermal and Photo Oxidation of some Non-Conjugated Olefins," by L. Bateman and J. L. Bollard.

Speakers at Coast Meeting

Speakers for the 1947 Pacific Chemical Exposition, Oct. 21 to 25, San Francisco, were recently announced by Dr. R. D. Stewart, Univ. of California, program director. Among the papers that may be of interest to soap and sanitary chemical suppliers, are "An Electronic Method for the Determination of Bromine Numbers" by H. D. DuBois and D. A. Skoog, California Research Corp.; and "Evaluation of Ternary Mixtures: Synthetic Detergent-Soap-Builder" by J. J. Morristoe and R. G. Newhall, Oronite Chemical Co., San Francisco. The California section of the American Chemical Institute of Engineers has not yet announced its program. Plans for the Pacific Insecticide Institute and of the American Society for Testing Materials are still in preparation.

New Ink Removing Cream

A new soapless detergent for removal of aniline inks and hectograph inks from the hands will be introduced soon by Milburn Co., Detroit, manufacturers of protective creams for industrial users. The compound will bear the brand name of "Plysol."

Urges Statistics Bill

Representatives of the various branches of the fats and oils industry recently urged speedy congressional enactment of H.R. 3895 authorizing the Census Bureau to continue the collection and publication of monthly statistics on production, shipments, and stocks of vegetable, animal and marine oils. Similar legislation has been reported in the Senate and is now awaiting passage. Among those testifying were John B. Gordon of the Bureau of Raw Materials for the American vegetable oils and fat industry, and Roscoe Edlund, manager of the Association of American Soap and Glycerine Producers.

Boston BIMS Golf Date

BIMS of Boston met for their second golf gathering of the season on Wednesday, July 23rd at Commonwealth Country Club, Newton, Mass., according to a report from C. Ernest Ingham, Ingham & Co., Boston, chairman of the executive committee.

This dry type grease spot remover now being marketed by Aidmore Products Corp., Orange, N. J., under the name, "Johnny-on-the-Spot," is shaped like a thick dry crayon or pencil which, when rubbed into a spot, leaves a thick white dry powdery coating. After a few moments this coating, which contains "oleodigestine," is said to lift the spot out of the fabric. The powder may then be brushed off. The new product is odorless.

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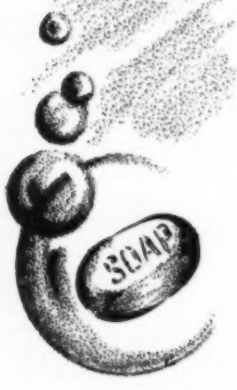

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A NAME AS OLD AS THE AMERICAN CHEMICAL INDUSTRY

Leppart to Prior Chemical

John C. Leppart, formerly assistant vice-president of Southern Alkali Corp., Corpus Christi, Texas,

J. C. LEPPART

recently became associated with Prior Chemical Corporation, New York, as vice-president. Mr. Leppart's years in the alkali industry date back to 1919 when he graduated from Cornell University, Ithaca, N. Y., as a chemical engineer to join the Solvay Company. He went with Columbia Alkali Co. in 1930, taking a leave of absence from Columbia in 1942 to head up the chlorinated chemicals and allied products section of the W.P.B. in Washington where he remained until October, 1945. In 1936, he was president of the Salesmen's Association of the American Chemical Industry.

SOD Census Reports

It seems probable, following a conference in Washington, July 24, attended by some forty manufacturers of soaps and synthetic detergents, that the U. S. Bureau of the Census will tabulate separate production figures for soaps and synthetic detergents in making its new census report for the industry.

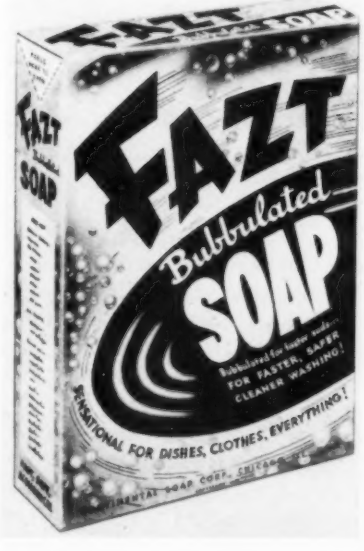
Indications were that the Census will keep soap classifications just about as they were in previous reports. Synthetic detergents will probably be broken down into three major groupings: 1) synthetic detergents containing no phosphates, no silicates and no soap, 2) SODs in combination with soap and 3) SODs in combination with alkaline salts. Under each of the three classifications, separate headings will list individual figures for liquids, flakes, powders, in package, bar, carton or bulk.

Par-busters to Detroit

Forty-seven "par-busters" of the joint golf auxiliary of the Chicago Perfume, Soap and Extract Association and the Chicago Drug and Chemical Association, spent a day golfing in Detroit on June 24th. The occasion was the tenth intercity golf meeting of the Allied Drug and Chemical Association of Michigan.

Continental Markets "Fazt"

Continental Soap Corp., Chicago, is testing in the Chicago market a new soap powder, "Fazt,' for laundry and kitchen use. Since succeeding to the business of Western Chemical Co., some years ago, Continental has produced bulk soaps and detergents and the new product, developed after extensive research, is its first in the domestic soap field. Advertisements in Chicago papers announced the product in June. Distribution of the 21½ oz. packages will be made through grocery stores and after the Chicago tests, it is planned to offer the product nationally.



Takes New Sales Post

W. I. Galliher was appointed executive sales manager of Southern Alkali Corp., a subsidiary of Pitts-

W. I. GALLIHER

burgh Plate Glass Co., Pittsburgh, late in July. Mr. Galliher has been executive sales manager of Columbia Chemical Division, another subsidiary of the company, since January, 1943, and will correlate the sales activities of the two units.

Lever Tests Advertising

Starting in September, Lever Brothers Company, Cambridge, Mass., will spend two million dollars on a program to test long-used media and themes for the advertising of seven major products, according to an article in the July 28th issue of *Advertising Age* describing the policies of the company with regard to sales and advertising in the future months. Among the products to be stressed are "Lux," "Lux Flakes," "Rinso," "Spry," "Swan" soap and "Pepsodent."

Armour Appoints Shea

David Shea, for 18 years with the sales department of Lever Brothers Company, Cambridge, Mass., was recently appointed sales promotion manager for the household soap and toiletry products of Armour & Co., Chicago.

Coast Soaper Expands

Pioneer-Queen Lily Soap Co., San Francisco, is planning on a $200,000 expansion of present manufacturing facilities in that city.

Gaybex Moves

Gaybex Corporation recently moved its offices and manufacturing facilities from Nutley and Delawanna, N. J., to larger quarters in Newark, N. J. at 70 Lister Ave. Upsets due to the telephone strike prevailing at the time caused the company's name to be omitted from the new directory. Its telephone number is now Market 3-1963.

The company has announced sales representatives for its line of degreasing solvents, detergents and penetrants: Apex Engineering Co., Chicago, for north shore area, Chicago; Badger Associates, Oshkosh, for Wisconsin; Howard S. Wharton, Delray Beach, for Florida; Harris Pump & Supply Co., for Pittsburgh, and, as the resident representative for western Pennsylvania and West Virginia, S. E. Newman.

USDA OK's Anti-Oxidant

The use of propyl gallate as an anti-oxidant in edible fats and oils was recently approved by the U. S. Department of Agriculture. Propyl gallate, produced by Heyden Chemical Corp., New York, has been used in inedible oils, such as cod liver oil used as a poultry feed, and in lotions and similar products where the slowing of oxidation is desirable.

To Sell Perfumes in Canada

Scottish Perfumes, Ltd., Glasgow, recently announced their intention of marketing their products in Canada and appointed Jack Christie as representative. The company is planning to open a store in a Canadian city favorable to retail sales of Scottish face creams, perfumery and other cosmetics.

Verley Relocates

Albert Verley & Co. have announced that on May 15, 1947, they moved offices to new quarters at 440-450 West Superior Street, Chicago.

Chem Exposition Date Set

The date for the twenty-first exposition of chemical industries has been set for December 1 to 6, 1947, at the Grand Central Palace, New York. More exhibitors are making applications for more space than heretofore and an increase in exhibits of chemicals is expected. The display of processing equipment will be more comprehensive than usual, with many new developments to be disclosed. Raw and fabricated materials, standard mill units, such as valves and piping, shafting, pulleys, belts, clutches and couplings, transmissions, conveyors, motors, and pumps will be shown in greater variety, and the latest products of research and development in the industrial chemicals field will be featured.

Detergents in Britain

In Great Britain the first manufacture of chemicals from petroleum began during the war at the Shell refinery at Stanlow on the Manchester Ship Canal, where a large plant was built to produce synthetic soaps, which before the war were supplied almost entirely by Germany. This plant is the only one of its kind in the world. It was originally designed for an output of 12,000 tons per year, but this output has been doubled. Peacetime demands for synthetic detergents have proved to be so great that an additional plant must be constructed; by the middle of 1948 it is hoped to have an annual production of 50,000 tons of synthetic detergent.

The products of the petroleum chemical industry include the sodium salts of higher alkyl sulfates, of which "Teepol" is an example. The tremendous task involved in cleaning public service vehicles is greatly simplified by the use of one of this series of synthetic detergents. They can also be used to meet the problems of aircraft cleaning. One of the Teepols is completely soluble and effective in sea water, and is of special use in ships' laundries.

Expansion of plants by the Shell Chemical Manufacturing Company Ltd., will insure a larger supply of synthetic detergents, wetting agents, fungicides, and other products. This will partly replace imports from the United States and will help to meet new needs. These developments will also create a new export trade for Britain. *Soap, Perfumery, Cosmetics 20*, 361-3 (1947).

New Cotton Oil Plant

Delta Products Co., Wilson, Ark., has started operation of a new plant which utilizes a continuous solvent oil method for extracting oil from cottonseed, according to recent announcement from Allis-Chalmers Mfg. Co., Milwaukee, which cooperated in design and construction of equipment.

Victor Chemical 50th Year

Victor Chemical Works, Chicago, observed its 50th anniversary June 20 with the presentation to the Chicago Museum of Science and Industry of a new exhibit showing new Victor products and equipment. Employees and their families were invited for a preview of the display and there was a dinner for officials of the company and the Museum.

Woburn Plant Additions

Work on additions to the plant of Woburn Chemical Corp., Harrison, N. J., is nearing completion. The new facilities will be used for the production of stearic acid replacement products according to the company.

Starts Customer Research

Organization of a customer research department of Kimble Glass, division of Owens-Illinois Glass Co., Toledo, was announced July 10th. Joseph F. Greene, director of research for Kimble Glass, has been named director of the new department. Associated with Mr. Greene will be James J. Moran, formerly technical manager of the sales department, who will specialize in problems dealing with scientific glassware; and Winfield F. Smith, former director of technical research for the container division, who will supervise development and improvement of packages. The new customer research department will be developed in Vineland, N. J., but may be moved to Toledo early in 1948.

Hal M. Nichols Dies

Hal Miller Nichols, 64 years old, who recently retired as head of Chicago operations of American Can Co., died at Lake Worth, Fla., June 3. He had been with American Can for 32 years.

BIDS AND AWARDS

Scouring Powder Bids

In a recent opening for miscellaneous supplies by the United States Marine Corps, Washington, D. C., bids were received on these various quantities of scouring powder: item 1a, 5,250 pounds; item 1b, 3,000 pounds; item 1c, 7,500 pounds; item 1d, 6,750 pounds; from: Day & Frick Co., Philadelphia, item 1a, 6.3 cents; item 1b, 7.2 cents; item 1c, 8.2 cents and item 1d, 8.2 cents; and Bon Ami Co., New York, item 1a, $4.66 a case; item 1b through 1d $4.66.

Navy Paste Soap Bids

The following bids were received on 308,000 pounds of paste soap in a recent opening for miscellaneous supplies by the New York Navy Purchasing Office, New York: Merchants Chemical Co., Detroit, $9.69, 125 pound drum; Crystal Soap & Chemical Co., Philadelphia, 12.4 cents a pound; E. F. Drew & Co., New York, 12.5 cents; Clifton Chemical Co., New York, 15 cents; R. M. Hollingshead Corp., Camden, N. J., 15.8 cents; Rose Chemical Co., New York, 15.9 cents; Harley Soap Co., Philadelphia, 16.9 cents and Unity Sanitary Supply Co., New York, 27 cents.

P. O. Laundry Soap Bids

In a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C., the following bids were received on 88,000 pounds of bar laundry soap: Standard Soap Co., Camden, N. J., 10 cents a pound; Kamen Soap Products Co., New York. fob Barberton, O., 8.7 cents, fob New York 9.7 cents, fob Chicago 9.7. cents, fob Kansas City 9.7 cents, fob San Francisco 9.7 cents; alternates: fob Barberton, O. 8.2 cents, fob New York 9.2 cents, fob Chicago 9.2 cents, fob Atlanta 9.2 cents, fob Kansas City 9.2 cents and fob San Francisco 9.2 cents; Knoxall Corp., Indianapolis, 12.5 cents; Unity Sanitary Supply Co., New York, 12.5 cents; Fischer Industries, Cincinnati, 10.2 cents fob Cincinnati, 10.6 cents fob New York, 10.3 cents fob Chicago, 10.8 cents fob Atlanta, 10.8 cents fob Kansas City and 11.2 cents fob San Francisco; Colgate-Palmolive-Peet Co., Jersey City, N. J., 9.49 cents fob Kansas City and 9.49 cents fob San Francisco; Cudahy Packing Co., Chicago, 19.2 cents fob New York, 18.38 cents fob Chicago, 18.9 cents fob Atlanta, 18.6 cents fob Kansas City and 18.6 cents fob San Francisco; Manhattan Soap Co., New York, 10.97 cents, alternate 11.245 cents; Gillam Soap Works, Fort Worth, Tex., 9 cents; Pennsylvania Soap & Wax Co., Pittsburgh, 12.5 cents; Peck's Products Co., St. Louis, 11.5 cents; Armour & Co., Chicago, 88,020 pounds at 11.5 cents a pound, 11.7 cents fob New York, 12.59 cents fob Chicago, 12.62 cents fob Atlanta, 13.22 cents for 13,020 pounds fob Kansas City.

P. O. Soap Bids

Bids on 160,000 pounds of toilet soap were received in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C. They were submitted by Swift & Co., Washington, 17.3 cents a pound; Manhattan Soap Co., New York, 19.65 cents; Pioneer Soap Co., San Francisco, 50,000 pounds only, 16 cents a pound; Stahl Corp., Glendale, New York, 14.75 cents.

In another opening on the same date by the Post Office Department, Washington, D. C., these bids were received on 60,000 pounds of soap powder: Dorsett-Jones, Baltimore, 10.6 cents a pound and fob destination 14.04 cents; Merichen Co., Houston, Tex., fob Houston 4.75 cents, alternate, fob New York 6 cents, fob Chicago 5.75 cents, fob Atlanta 5.85 cents, and fob Kansas City 5.75 cents; Sugar Beet Products Co., Saginaw, Mich., 9.8 cents; Unity Sanitary Supply Co., New York, 9.5 cents; Chemical Manufacturing and Distributing Co., Easton, Pa., 5.45 cents; Bell Packing Co., Detroit, 8 cents, Stevens Soap Corp., Brooklyn, 5.14 cents; Kamen Soap Products Co., New York, fob Barberton, O., 9.4 cents and fob destination 9.8 cents; Marman Soap Co., Milwaukee, 18.5 cents; Procter & Gamble Distributing Co., Baltimore, 1,000 cases at $3.55 a case.

Typewriter Cleaner Bids

In a recent opening for miscellaneous supplies by the Bureau of Federal Supplies, Treasury Department, Washington, D. C., the following bids were received on item 1, (51C-1328) 1,280 bottles of typewriter type cleaner and item 2, (51C-1329) 216 bottles: Dicol Chemical Co., Mount Vernon, N. Y., item 1, 11⅝ cents and item 2, 16.5 cents; Walter G. Gies Co., Crownsville, Md., item 1, 10.75 cents and item 2, 16.5 cents.

GPO Liquid Soap Bids

Among the bids received on 4,400 pounds—80 drums of liquid soap in a recent opening for miscellaneous supplies by the Government Printing Office, Washington, D. C., were those of: Colgate - Palmolive - Peet Co., Jersey City, N. J., 41.552 cents a gallon; Peck's Products Co., St. Louis, 35 and 39 cents; Dixie Janitor Supply Co., Atlanta, 42 cents; Chemical Manufacturing & Distributing Co., Easton, Pa., 34 cents; Harley Soap Co., Philadelphia, 37.5 cents; R. M. Hollingshead Corp., Camden, N. J., 47 cents; Lanair Chemical Corp., Chicago, 37 cents; Crystal Soap & Chemical Co., Philadelphia, 33.2 cents; Tesco Chemical Co., Atlanta, 59 cents; Jos. E. Frankle Co., Philadelphia, 53 cents; Trio Chemical Works, Brooklyn, 42 cents; Uncle Sam Chemical Co., New York, 46 cents; Fischer Industries, Cincinnati, 49 cents; Keystone Soap & Chemical Co., Philadelphia, 49 cents; Wm. Messer Corp., New York, 59.78 cents; New York Soap Co., New York, 44 cents; Chicago Sanitary Products Co., Chicago, 52 cents; E. F. Drew & Co., New York, 35 cents; and Sanitary Soap Co., Paterson, N. J., 44 cents.

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Representatives—ST. LOUIS • PHILADELPHIA • LOS ANGELES • TORONTO

NEW TRADE MARKS

The following trade-marks were published in the July issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

LAVA SOAP — This in upper case reverse letters above the fanciful drawing of a volcanic peak for soap. Filed May 31, 1946 by Procter & Gamble Co., Cincinnati. Claims use since 1893 as to the word "Lava," and since Dec., 1944 as to the mark in its present form.

OROSET—This in upper case, bold letters for synthetic detergent. Filed Sept. 10, 1946 by Onyx Oil & Chemical Co., Jersey City, N. J. Claims use since Aug. 7, 1946.

STYLE KING — This in upper and lower case, bold, stencil letters for shampoo, tooth paste and tooth powder. Filed Aug. 6, 1945 by S. Buchsbaum & Co., Chicago. Claims use since Mar. 2, 1943.

AMIGO—This in lower case, extra bold, black letters for pine oil disinfectant. Filed July 15, 1946 by Amigo Laboratories, San Francisco. Claims use since Aug. 20, 1045.

DREAM HOUSE—This in lowcase, bold letters beneath the drawing of a cottage for household ammonia. Filed Sept. 6, 1946 by Permacide Chemical Corp., Wilmington, Del. Claims use since July 26, 1946.

KUL-ENE—This in large and small, extra bold upper case letters for compositions for removing scale from metals. Filed Feb. 25, 1947 by Process Improvement Co., Dearborn, Mich. Claims use since Feb. 3, 1947.

BIOPAL—This in upper case, extra bold, black letters for germicidal detergents. Filed July 16, 1946 by General Dyestuff Corp., New York. Claims use since May 1, 1946.

RATTAN—This in upper case, bold letters for shaving soaps, shaving creams and toilet soaps. Filed Aug. 24, 1946 by Sherman Perr, Newark, N. J. Claims use since June 29, 1946

PEST-B-GON — This in upper case, medium letters for parasiticides. Filed Oct. 30, 1945 by California-Spray Chemical Corp., Richmond, Calif. Claims use since July 27, 1933.

WDB-50—This in upper case, extra bold, shadow letters and numerals for insecticides. Filed Dec. 1, 1945 by Pennsylvania Salt Manufacturing Co., Philadelphia. Claims use since July 26, 1945.

ML—This in upper case letters for insecticides. Filed Mar. 15, 1946 by Midland Laboratories, Dubuque, Ia. Claims use since May 1, 1945.

SUPER-TEX — This in upper case, bold letters for insecticides. Filed Aug. 9, 1946 by Tex Products, Inc., Newark, N. J. Claims use since July 12, 1946.

BYE-BYE BUG—This in upper case, bold letters for insecticide. Filed Aug. 9, 1946 by Vita-Var Corp., N. J. Claims use since July 12, 1946.

BUNO — This in upper case, open letters for shampoo. Filed Aug. 16, 1946 by Buno Co., Philadelphia. Claims use since May 1, 1930.

QUINOTINE — This in upper case, medium letters for insecticides. Filed Aug. 29, 1946 by Monsanto Chemical Co., St. Louis. Claims use since Aug. 10, 1946.

DEZOL—This in upper case, open letters above a broad black rule for germicides. Filed Sept. 9, 1946 by Southern Specialties Corp., Charlotte, N. C. Claims use since Aug. 3, 1946.

Fanciful drawing of a doll for shampoo. Filed Sept. 14, 1946 by Helene Pressl, Inc., New York. Claims use since Oct. 6, 1944.

CLARO—This in upper case, extra bold, black letters for shaving cream. Filed Dec. 8, 1945 by Claro Laboratories, South Bend, Ind. Claims use since June 1, 1940.

BUCOLENE—This in upper case, bold, stencil letters for cleaning preparation. Filed Apr. 17, 1946 by Blackman-Uhler Co., Spartanburg, S. C. Claims use since Aug. 5, 1945.

WINGZOL—This in upper case, medium letters for soap. Filed May 31, 1946 by Wingzol Soap Co., Birmingham, Ala. Claims use since July, 1930.

LUSTRE EASE—This in upper and lower case, extra black, bold script letters for surface cleaning compound. Filed June 6, 1946 by Globe Cleaning Co., Mansfield, O. Claims use since Nov. 1, 1945.

HIDDEN TREASURE—This in upper case, reverse letters on a rectangular background for granulated hand soap. Filed June 17, 1946 by Miller Manufacturing Co., Morton, Ill. Claims use since Mar. 26, 1946.

EX-IT—This in upper case, bold, black letters on an arrow background for hand cleaner. Filed July 1, 1946 by Phillips Process Co., Rochester, N. Y. Claims use since Feb. 1, 1946.

TIP-TOP—This in upper case reverse letters on a diamond background in the upper corner of a much larger diamond background across the face of which runs a wide band, for dry cleaners. Filed Aug. 2, 1946 by Thompson Chemical Co., Pawtucket, R. I. Claims use since Oct. 31, 1924.

BOL-DEX—This in upper case, reverse letters along the top of an inverted pyramid, for preparation for cleaning toilet bowls. Filed Aug. 5, 1946 by Miami Products and Chemical Co., Dayton, O. Claims use since Oct. 1934.

SHIMBO—This in upper case, extra bold, black letters for metal polish. Filed Aug. 5, 1946 by Shimbo Manufacturing Co., New Orleans. Claims use since July 20, 1946.

CONQUEST—This in upper and lower case, inline letters for household cleansing powder. Filed Aug. 6, 1946 by Lewis-Hubbard Corp., Charleston, W. Va. Claims use since 1938.

TRANSGLO—This in lower case, bold letters for detergent for washing transportation equipment. Filed Aug.

MACKENZIE DETERGENTS

Technical Grade Chemicals

1. Sodium Metasilicate-Pentahydrate.
2. Poly-Phos
   A Super Poly-Phosphate
3. Sodium Sulphate (Glauber's Salts)
   Anhydrous

Synthetic Soap Powders

1. SPRAY DRIED (Bead Form). Synthetic Organic Detergents with polyphosphates. A COMPLETE PRODUCT ready for packaging.
2. Granular (dense) Synthetic Organic Detergent for Wool Scouring and other industrial uses.

MIXED DETERGENTS

Metaplus	Mild general household cleaner for painted surfaces. No wiping or rinsing required.
Dishwashing Compound	(Pink or White) Built to government specifications for Machine Dishwashing.
Hand Dishwashing Compound	With or without special GERMICIDE. Requires no wiping. When germicide is included, dishes are sanitized. Germicide is non-toxic, odorless, and tasteless.
Streakless Car Wash	A new product for washing cars, buses, trucks, etc. Will not streak. No wiping necessary.
Concentrated Soap Powder	50% less water than regular soap powders. For laundries, institutions, launderettes, home laundering.
Driveway Cleaner	For cement or wood floors, grease pits, kitchen floors, meat packing plants, etc.

As basic manufacturers of cleaning chemicals, we have facilities for producing special cleansers for any particular purpose.

MACKENZIE LABORATORIES, Inc.

Front and Yarnall Streets, Chester, Pa.

8, 1946 by Calgon, Inc., Pittsburgh. Claims use since Aug. 2, 1946.

SMOOSH—This in upper case, bold, inline letters for all-purpose household cleaner. Filed Aug. 9, 1946 by Smoosh Manufacturing Co., Los Angeles. Claims use since July 15, 1946.

ALUMILENE—This in upper case, extra black, bold letters for cleaning powder for aluminum. Filed Aug. 22, 1946 by Fischer Industries, Inc., Cincinnati. Claims use since Oct. 1, 1939.

W.L.G.—This in upper case, extra bold letters for alkaline detergent composition for cleaning metals, etc. Filed Aug. 22, 1946 by Wyandotte Chemicals Corp., Wyandotte, Mich. Claims use since Mar. 8, 1938.

TUMBLIN TIM—This in upper case, extra bold, black letters for shoe polish. Filed Aug. 30, 1946 by Federal Shoe Corp., Nashville. Claims use since Feb. 14, 1946.

SWEL—This in upper case, extra bold, black letters for all-purpose household washing compound. Filed Aug. 30, 1946 by Swel Products Corp., Salt Lake City, U. Claims use since July 7, 1946.

SKIL—This in upper case, extra bold, black letters for insecticides. Filed Apr. 12, 1946 by Gallowhur Chemical Corp., New York. Claims use since Jan. 23, 1946.

WHITE TAR—This in upper case, boid letters for lavender scented naphthalene flakes. Filed June 10, 1946 by Koppers Co., Inc., Kearney, N. J. Claims use since 1918.

FURIOUS—This in upper case, extra bold, black letters for shampoo. Filed Sept. 3, 1946 by Kathryn, Inc., Chicago. Claims use since July 24, 1945.

ARROGANT—This in upper case, extra bold letters for shampoo. Filed Sept. 3, 1946 by Kathryn, Inc., Chicago. Claims use since July 24, 1945.

ROLLICKING—This in upper case, bold letters for shampoo. Filed Sept. 3, 1946 by Kathryn, Inc., Chicago. Claims use since July 24, 1945.

POUTING—This in upper case, bold letters for shampoo. Filed Sept. 3, 1946 by Kathryn, Inc., Chicago. Claims use since July 24, 1945.

BEGUILING FUCHSIA—This in upper case, bold letters for shampoo. Filed Sept. 3, 1946 by Kathryn, Inc., Chicago. Claims use since July 24, 1945.

LANOPLUS—This in upper case, extra bold letters for shampoo. Filed Oct. 5, 1946 by Lanolin Plus Cosmetics, Inc., Chicago. Claims use since Aug. 12, 1942.

GAMTONE—This in upper case, bold letters for parasiticides. Filed Oct. 18, 1946 by California Spray-Chemical Corp., Wilmington, Del. Claims use since Sept. 18, 1946.

GAMMATONE—This in upper case, extra bold letters for parasiticides. Filed Oct. 18, 1946 by California Spray-Chemical Corp., Richmond, Calif. Claims use since Sept. 18, 1946.

COMMON SENSE—This in upper case, bold letters above the fanciful drawing of a dressed up rat for rat poison. Filed Oct. 22, 1946 by Common Sense Manufacturing Co., Buffalo, N. Y. Claims use since 1891.

C.S.—This in upper case, bold letters in quotation marks above the fanciful drawing of a rat wearing clothes, for preparation for destroying rats and other vermin. Filed Oct. 22, 1946 by Common Sense Manufacturing Co., Buffalo, N. Y. Claims use since 1925.

COMMON SENSE—This in upper case, extra bold letters for preparation for destroying rats and other vermin. Filed Nov. 6, 1946 by Common Sense Manufacturing Co., Buffalo, N. Y. Claims use since about 1891.

MAGIC FOAM—This in upper and lower case, extra bold, black letters for fabric cleaning preparation. Filed Sept. 7, 1945, by Magic Foam Sales Corp., Cincinnati. Claims use since Jan. 1, 1932.

SAXON SHIELD—This in upper case, extra bold letters for coconut oil shampoo. Filed July 8, 1946 by Royal Pharmacal Corp., Brooklyn. Claims use since June 1, 1946.

CELCON—This in upper case, bold letters for furniture polishes. Filed Aug. 27, 1946, by Celanese Corp. of America, New York. Claims use since Aug. 16, 1946.

Trade Marks Granted

426,442. Insecticides. Filed by United Chemical Co., Rutland, Vt., Mar. 20, 1946. Serial No. 498,635. Published Oct. 8, 1946. Class 6.

426,807. Washing fluid for girdles, foundations, etc. Filed by Solvent Products, Inc., New York, Dec. 5, 1945. Serial No. 492,744. Published Oct. 15, 1946. Class 4.

426,818. Household washing composition. Filed by Hood Chemical Co., New York, Feb. 4, 1946. Serial No. 495,968. Published Oct. 15, 1946. Class 4.

426,826. Cleaner for asphalt tile and other types of floor coverings. Filed by David E. Kennedy, Inc., Brooklyn, Feb. 26, 1946. Serial No. 497,249. Published Oct. 15, 1946. Class 4.

426,900. Cleanser and deodorant. Filed by Jefferson Manufacturing Co., Los Angeles, Apr. 13, 1945. Serial No. 482,103. Published Oct. 15, 1946. Class 6.

426,906. Preparation for sterilizing glassware. Filed by Gray and Gray, Venice, Calif., May 28, 1945. Serial No. 483,853. Published Oct. 30, 1945. Class 6.

426,928. Insecticide. Filed by Edgar A. Murray Co., Detroit, Oct. 11, 1945. Serial No. 489,819. Published Oct. 22, 1946. Class 6.

426,929. Poison for mice. Filed by Edgar A. Murray Co., Detroit, Oct. 11, 1945. Serial No. 489,821. Published Oct. 22, 1946. Class 6.

426,930. Rat poison. Filed by Edgar A. Murray Co., Detroit, Oct. 11, 1945. Serial No. 489,823. Published Oct. 22, 1946. Class 6.

426,932. Germicides. Filed by Vestal Chemical Co. St. Louis, Oct. 15, 1945. Serial No. 489,998. Published Oct. 15, 1946. Class 6.

426,935. Shampoos. Filed by Associated Products, Inc., Chicago, Oct. 25, 1945. Serial No. 499,476. Published Oct. 22, 1946. Class 6.

426,964. Insecticides. Filed by Boyle-Midway, Inc., Jersey City, N. J., Feb. 14, 1946. Serial No. 496,537. Published Oct. 15, 1946. Class 6.

(Turn to Page 141)

Aluminum Chloride—As You Like It

Consistently uniform high purity is one reason why processors like to use Hooker Aluminum Chloride, Anhydrous. They know that here is one catalyst that will not "gum up" the works because of unknown impurities or changes in analysis from one shipment to another. Where smooth operations depend upon uniform purity of the Aluminum Chloride, you can depend on Hooker.

In Hooker Aluminum Chloride, too, you have a choice of three sizes from which you can select the one which will give you the best results.

Fine Grind .....an unscreened material practically all passing 20 mesh.

Coarse Grind ....unscreened, 1 mesh and finer containing 25 to 35% finer than 20 mesh.

Coarse Screened ..same as above screened to remove 20 mesh and finer.

Hooker Aluminum Chloride is being used as a catalyst in many Friedel-Crafts syntheses, polymerization, isomerization and halogenation. Practically free from iron (0.05% max.) it is especially desirable in the preparation of derivatives for use in the manufacture of high octane gasoline, lubricants, synthetic rubber, dyes, varnishes and pharmaceuticals.

Additional physical and chemical data on this important chemical are contained in Technical Data Sheet 714, sent when requested on your letterhead. Hooker's Technical Staff is also available for consultation and help on the application of Aluminum Chloride and the other Hooker chemicals to your purposes.

SPECIFICATIONS

Hooker Aluminum Chloride, Anhydrous $AlCl_3$

Gray, crystalline solid in three sizes.

Molecular Weight 133.3

ANALYSIS

Aluminum Chloride	98.5 % min.
Iron	0.05% max.
Non-sublimables in air at 950° C.	1.5 % max.

HOOKER CHEMICALS

HOOKER ELECTROCHEMICAL COMPANY

Buffalo Ave. and Union St., Niagara Falls, N. Y.
New York, N.Y. Wilmington, Calif. Tacoma, Wash.

Caustic Soda Paradichlorbenzene Muriatic Acid Chlorine Sodium Sulfide Sodium Sulfhydrate

RAW MATERIAL MARKETS

As of July 25, 1947

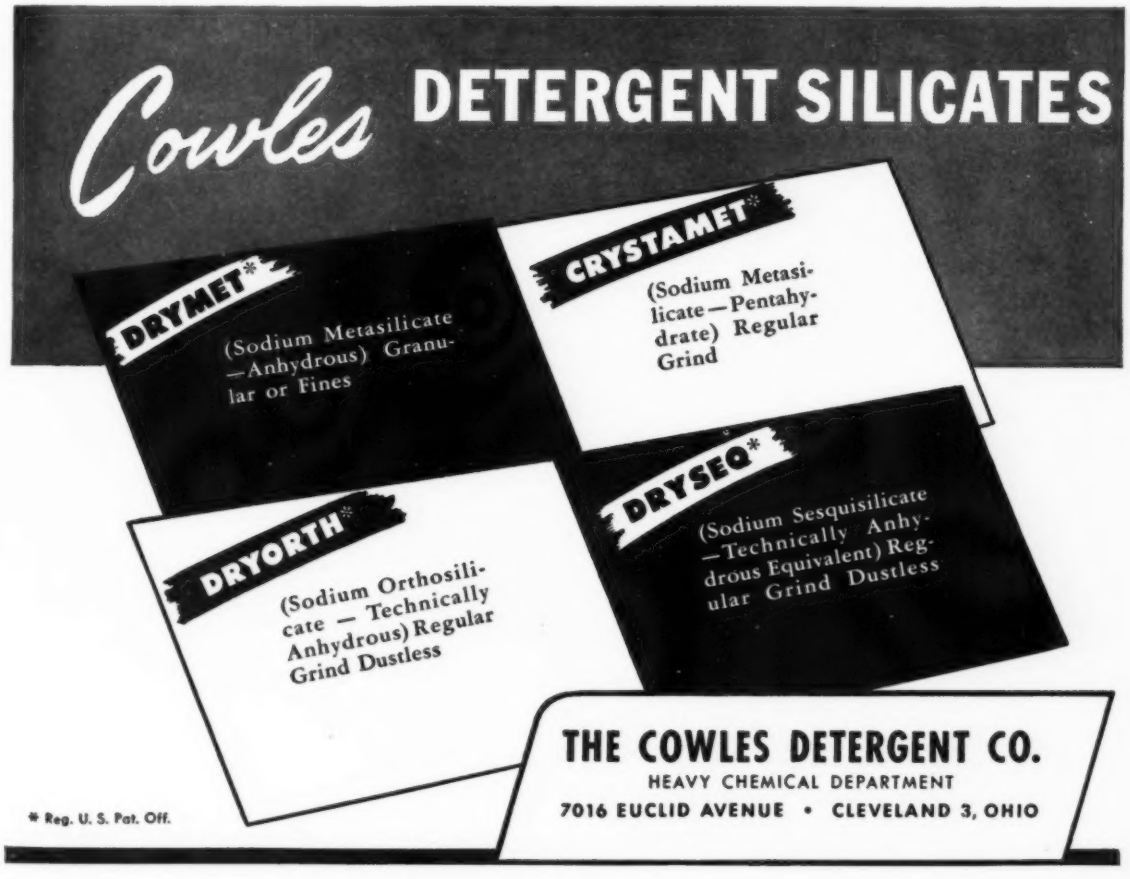
A CONSIDERABLY improved position on stocks of fats and oils during the first, and particularly the second, quarters of 1947 was reported by the fats and oils branch of the U. S. Department of Commerce during July. Reduced demand is given as the primary reason for this increased accumulation of fats and oils. Stocks, growing at a much faster rate than during the comparable period last year, rose 290,000,000 pounds in the first five months of 1947, mainly April and May, and were almost 100,000,000 pounds higher on May 30 than on the same day in 1946.

Two of the soap maker's principal fats: tallow and grease holdings showed the greatest rise. Stocks of tallow and grease at the end of March were reported at 174,000,000 pounds. By the end of May they totaled 237,000,000 pounds, all of which may explain why prices on those two commodities fell so fast and so far.

A decline in the fats and oils stock position is expected to develop before October as production near the end of the crop year will not be able to meet consumption even at the current low level. However, in spite of slower production, it is anticipated stocks will be greater on September 30 than the 1,200,000,000 pounds held on the same date in 1946.

Although domestic production of oils and fats in the 1946-47 season is estimated at 9,400,000,000 pounds, a great deal of uncertainty exists in the market today because of questionable crop conditions as a result of heavy rains which caused so much flood damage during the early summer. The import-export picture with regard to fats and oils is somewhat blurred and the question of what will be expected of us in the way of relief is adding to the difficulties of predicting what lies ahead for fats and oils.

Imports of fats and oils in the first four months of this year were 128 per cent higher than during the first four months of 1946, according to Department of Commerce figures, but imports were still below the annual prewar rate of 2,000,000,000 pounds. Exports, on the other hand, have declined by about 10 per cent as compared with last year's rate, although fats and oils are still going out of the country at a far greater rate than during the prewar period.


Cowles DETERGENT SILICATES
DRYMET*
(Sodium Metasilicate —Anhydrous) Granular or Fines
CRYSTAMET*
(Sodium Metasilicate—Pentahydrate) Regular Grind
DRYORTH*
(Sodium Orthosilicate — Technically Anhydrous) Regular Grind Dustless
DRYSEQ*
(Sodium Sesquisilicate —Technically Anhydrous Equivalent) Regular Grind Dustless
THE COWLES DETERGENT CO.
HEAVY CHEMICAL DEPARTMENT
7016 EUCLID AVENUE • CLEVELAND 3, OHIO
* Reg. U. S. Pat. Off.

KRANICH SOAPS

MANUFACTURED FROM FATTY ACIDS DISTILLED AND OILS REFINED BY US

CONCENTRATED

LIQUID TOILET SOAPS

30%-40% COCONUT

☆ ☆ ☆ ☆ ☆

LIQUID SOAP SHAMPOOS

COCONUT and CASTILE

☆ ☆ ☆ ☆ ☆

POWDERED SOAPS

Pure Coconut
U.S.P. Castile

☆ ☆ ☆ ☆ ☆

POTASH SOAPS

Soft Potash 40%
Hard Potash 65%
U.S.P. XII Green
Pine Scrub 22%

☆ ☆ ☆ ☆ ☆

Kranich Soap Company, Inc.

54 Richards Street **Brooklyn 31, N. Y.**

KRANICH SOAPS

Except for the Philippines and the Belgian Congo, where recovery of oil production has gone forward at a much faster rate than was expected, tropical oil production is not getting back on its feet very quickly. As a matter of fact it is now predicted that world production of oils and fats will not reach prewar levels before late 1949 in the estimate of the Department of Commerce. It adds that the final quarter of 1947 should bring about a considerably brighter outlook.

Third quarter export allocations of fats and oils will total 153,100,000 pounds, the U. S. Department of Agriculture announced on July 11. This amount includes 19,400,000 pounds allocated to export claimants in exchange for other fats and oils needed in the United States. Final figures on the 1946 third quarter allocations by the U. S. totaled 179,800,000 pounds. In terms of fat content the third quarter 1947 allocation includes 35,500,000 pounds of lard, 2,900,000 pounds of margarine, 46,200,000 pounds of shortening and other edible oils, 14,800,000 pounds of inedible fats and oils and 10,800,000 pounds of soap.

During the week of July 21 asking quotations on copra from the Philippines were advanced $11.50, to $154 per short ton, delivered on the Pacific Coast. During the previous week foreign buyers bought moderate quantities if Philippine copra, which had the effect of strengthening the market.

An easing in the continued tight situation on alkalies was predicted for next year by Leonard T. Beale, president of Pennsylvania Salt Manufacturing Co., Philadelphia, during July. He pointed out that equipment repairs and replacements are being made on a broad scale throughout the alkali industry's plants and these should add about 10 per cent to current production. In addition, he stated, new plants will increase alkali supplies another 10 per cent. A temporary drop in consumption of alkali products during July was laid to vacation closings of many textile plants.

From the price standpoint, one of the large producers of caustic soda announced an increase of 10 cents per hundred pounds which went into effect July 1. The new schedule lists $2.60 per hundred pounds for solid, 76 per cent caustic, flakes or ground, $3 per hundred pounds, all in drums. f.o.b. works; liquid 50 per cent, basis 76 per cent, in seller's tanks, $2 per hundred pounds, and liquid 70 per cent, basis 76 per cent, $2.10 per hundred pounds, f.o.b. works.

A number of price reductions plus an increasing supply of aromatic chemicals and essential oils characterized the marketing activity of perfuming materials during the latter part of July. Anethol; cananga; Dalmatian sage; vetiver, Bourbon, all showed declines.

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After hydrogenation, sunflowerseed oil was shown by fractional distillation to contain palmitic acid 10 per cent, stearic acid 86 per cent, arachidic acid 4 per cent, and a very small amount of myristic acid. S. Uyeno and M. Tsujimura, *J. Chem. Soc.* Japan 63, 891-2; through *Chem. Abs.*

CRESYLIC ACID — FORMALDEHYDE
High Boiling Tar Acids
Tar Acid Oil
Pyridine Bases, Refined, boiling range 160-190°C.
Basis raw materials for disinfectants, insecticides, soaps, perfumes, plastics, textiles, pharmaceuticals, lacquers, etc.
ASSOCIATED COMPANIES
KAY FRIES CHEMICALS, INC. NEW YORK, N. Y.
CHARLES TENNANT & CO., CANADA, LTD. TORONTO, CANADA
AMERICAN-BRITISH
CHEMICAL SUPPLIES, Inc.
180 MADISON AVE., NEW YORK

To Help You Solve Your SOAP MAKING PROBLEMS

HOUCHIN *Offers You Over Seventy-Five Years of Specialized Experience...*

spent in designing, manufacturing machines, and working in close cooperation with leading soap manufacturers throughout the world. Houchin are "specialists" in their field.

HOUCHIN Soap Machines have proven their efficiency and economy in Soap Making Plants throughout the world. Once a Houchin machine is installed — it becomes a permanent installation and will only be replaced after many years of efficient service by a NEW Houchin machine of greater production capacity.

These machines include equipment for making

LAUNDRY SOAPS
TOILET SOAPS and
SOAP POWDERS

Send for Bulletin No. 280 describing the entire Houchin Line.

HOUCHIN
MACHINERY COMPANY, INC.

Manufacturers of Soap Making Equipment

SIXTH AND VAN WINKLE AVENUES — HAWTHORNE, N. J.

PRODUCTION SECTION

Perfuming your Soap

Test your perfume in miniature sample-size cakes by the use of a laboratory-size mill and plodder

(Part II)

FIXATIVES for soap perfumes are very important. According to Loir a soap perfume without fixatives either does not last or else it stains, or again the perfume has the opposite effect to what is desired. Some soaps, particularly those containing glycerine, act as a fixative themselves by retarding volatilization. Loir divides fixatives into four classes: (a) animal substances having very persistent perfumes—civet, ambergris and musk; (b) resins and balsams—oak moss, benzoin; (c) crystalline synthetics—artificial musk, heloitropin, coumarin, benzoic acid; and (d) by-products of the manufacture of natural and synthetic perfumes. To these should be added another group: (e) neutral fixative-diluents of the benzyl and amyl type—also dimethyl and diethyl phthalates and certain glycols.

Fixatives have never yet been scientifically explained or evaluated. In all probability there are certain "true fixatives" whose molecular structure favors a restraining or anchoring type of adsorption; probably resins, balsams and ambergris belong to this type. Then there are long-lasting bodies of persistent diffused odor which help to preserve the illusion of continuity. Finally there are all the various aromatics of different volatilities that can be made to carry on the theme where the perfume leaves off. The use of emulsifying agents as fixatives has been recommended by Ruemele. Soap is of course such an emulsifying agent for oil-water systems, but some fatty acid soaps are more effective for this purpose than others.

In the perfuming of laundry soaps, usually 1/6 to ¼% of the cheaper classes of perfume is used. In such small percentage, the volatile perfumes such as mirbane and citronella do not last long and the natural odor of the soap generally reappears. Naphthalene by itself is very cheap for a perfuming body and has been known to impart a freshness of smell to the soap, though the masking of the soapy odor is not perfect. According to Datta and Basu, Industrial Research Laboratory, Calcutta, in a perfume mixture for soap, 15% or so of the perfume proper gives very much more than a normal effect if backed by 60-65% naphthalene, the balance being 20-25% of fixatives like benzyl benzoate, diethyl phthalate or dinitrobenzene. The naphthalene masks the soapy odor and is in turn masked by the fixative.

In perfuming cold-process soaps, chief consideration is given to the stability of the materials used in the presence of heat and concentrated alkali. While such oils as geranium, palmarosa, and sandalwood can be used in these soaps with little fear of unwelcome reactions, certain esters and aldehydes cannot be recommended. One of the best British cold-made toilet soaps is tinted an attractive shade of brown and perfumed with a sandalwood, cedarwood, clove, bromstyrol, synthetic musk, and vanillin complex. The following simple formula has been successfully employed for perfuming white cold-process soaps: Java citronella oil, 45%; oil of rosemary, 16%; terpineol, 39%. However, it is usually best for the majority of soapmakers to purchase ready-made perfume compositions which can be supplied under the guarantee of the manufacturer.

Perfume oils used for liquid soaps and shampoos sometimes are best when mixed with at least an equal volume of alcohol or glycol-type solvent prior to incorporation. Clear solvents are essential in such products. From 0.2 to 0.5% perfume oil is usually sufficient for perfuming liquid soaps and shampoos.

Only the more stable and non-reactive aromatic materials should be used for the perfuming of floating soaps. Many germicidal or antiseptic soaps are largely dependent for their effect (which is largely a psychological one based on odor) upon the incorporation of coal tar, phenolic substances and similar modifying substances giving a carbolic type odor. Naphthalene is one of the most commonly used modifiers, and resin is usually present in the form of sodium resinate.

HAVING finally obtained a perfume compound that after several weeks smells something near what has been aimed at, it should be incorporated with the soap in carefully controlled porportions. After mixing a pound or so of soap with its quota of perfume, the mixture should be run

MAYPON The Improved Lamepon • MAYPON The Improved Lamepon

for sudsing and detergent purposes...

MAYPON SUPER K
and
MAYPON K
for
Household
and
Industry

USE...
MAYPON
(THE IMPROVED LAMEPON)
PROTEIN — FATTY ACID — CONDENSATION PRODUCT

MAYPON 4C
for
Cosmetics

produced ONLY by
MAYWOOD CHEMICAL WORKS
MAYWOOD, N. J.

Samples
and
Literature

MAYPON The Improved Lamepon • MAYPON The Improved Lamepon

three times through a clean mill. The resulting ribbons may now be pressed into balls by hand and then stamped in a convenient mold. (Ed. Note: A more accurate evaluation under actual milling and plodding conditions can be obtained with a small laboratory mill and plodder combination; see *Soap*, May, 1947, page 68. Another method of preparing sample cakes is the use of a laboratory press. This will be discussed in the Sept. issue.) Accurate records should be kept as to composition, base, date of experiment, etc.

At the end of one two, and three months, the soap cakes should be examined and the color of the soap and strength and nature of the perfume noted. The soap should be compared with the ideal (if any) in its particular line by several individuals preferably without the perfumer knowing which of the two he will smell first so that an unbiased opinion is obtained. The compound must be properly aged before using. First impressions of freshly perfumed sample cakes are often disappointing but judgment should not be passed before several days have elapsed. A well-planned mixture almost always takes time to develop.

The strong basic characteristic odor of some soap stocks must be considered in the selection of suitable aromatic mixtures to overcome it and convert it into a reasonably pleasant perfume. The final test of a perfume's suitability is the use of an aged cake at the wash stand. As the *Givaudanian* pointed out (Sept. 1939): "Does it develop a gaseous note in contact with water? Does it leave a clinging pleasing aroma on the skin when dry? Will the type of odor pall upon one with continued use? All of these are important matters to consider before passing final judgment on a soap perfume."

The color of a soap cake has a definite influence both on the selection of a perfume and on the customer acceptance of the product on the market. From a perfumer's point of view, white soaps are definitely unsatisfactory—for they impose too narrow a choice of aromatics. As far as the general public's opinion is concerned, manufacturers will do well to study the scientfically conducted investigations of Gerd Klaass.

In 1938 this Amsterdam publicity expert was asked by a Dutch soap-making firm: "What must be the color of the toilet soap we intend placing on the market?" Klaass performed the following test: Soap was supplied to bathing establishments where visitors were supplied with a piece of soap gratuitously. Bars of soap of different colors were all placed together in a basket and the clients were allowed to make their selections quite independently. As a result of the test, the most popular soaps proved to be those tinted yellow-green. Joint second place was taken by the colors blue-green and orange-red. It is interesting to note that the white cake fell to the bottom of the list. Violet color took fourth place although the number of men who preferred it as compared to women was in the ratio of 1:14. The soap-making firm concentrated on yellow and green toilet soaps with a special violet tinted line for women. The color of a soap product is of paramount importance in connection with improved perfuming.

No branch of perfumery is more beset with difficulties than soap perfuming and if the problem of discoloration can be reduced to a bare minimum, closer attention can be paid to the development of new and better perfumes—compositions that will last longer, cost no more, and that will definitely not irritate the skin. Charles Morel, *Soap, Perfumery & Cosmetics*, Jan. 1947, p. 48. (For part one of this article, see the July issue of *Soap & Sanitary Chemicals*.

Micelle Formation

Use of a dye to determine the critical concentration for micelle formation in soap solutions is related to the existence of an equilibrium mixture of the dye in aqueous solution, from which one form is preferentially solubilized by the soap micelle. In addition, the charge on the dye ion must be opposite to that of the micelle.

Pinacyanol chloride and Rhodamine 6G are suitable for determination of the critical concentrations of anionic soaps, while Sky Blue FF, eosin, fluorescein, and acidified 2,6-dichlorophenol indophenol may be used with cationic detergents. The method involves titration in which the disappearance of micelles is determined by (1) a sharp change in color, or (2) a sharp reduction in fluorescence. Some dyes exhibit both changes.

When salts are present, the depression of the critical concentration is related to the concentration of that ion which bears a charge opposite to that on the colloidal aggregate. M. L. Corrin and Wm. D. Harkins, *J. Am. Chem. Soc. 69*, 679-83, 683-8 (1947).

Quaternary Determination

In a modification of Auerbach's method for determining quaternary ammonium salts, the well known quaternary ammonium-bromophenol blue salt is formed in carbonate solution in the presence of an excess but definite critical concentration of dye. The color intensity of the solution is measured directly without extracting the colored complex with an organic solvent. A photoelectric colorimeter is used with the proper filter to record the color density. The method is suitable for routine commercial analyses of concentrations of 20 p.p.m. or higher. E. L. Colichman, *Anal. Chem. 19*, 430-1 (1947).

Scouring Bath Strength

In connection with the continuous scouring of various kinds of cloth, an instrument was developed which measured the conductivity of the scouring solution and so made it possible to add more solution as needed, according to the reading shown. This is much simpler than periodic titrations of the scouring-bath liquid. R. D. Hale, *Am. Dyestuff Reporter 36*, 362-4 (1947).

Brazilian Palm Oil

Oil extracted from the fruit of the Brazilian palm has a beautiful white color. It melts at 32° C., has an acidity equivalent to 0.3 cc. of Normal sodium hydroxide solution, refractive index of 1.4499, saponification index of 250.1, and iodine value of 11.5. A. Lacerda. Rev. soc. brasil. quim. *14*, 113-18; through *Chem. Abs.*

UNION PACIFIC

TREASURE MAP OF INDUSTRY

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LOW ELECTRIC RATES
LEADER IN LUMBER
BASIC METALS AND ORES
LARGE AGRICULTURAL YIELD
SOURCE OF SEA FOOD
GATEWAY TO THE ORIENT
EXCELLENT TRANSPORTATION
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WATER POWER is one of Washington's most important industrial advantages. Two of the world's greatest dams, Grand Coulee and Bonneville, make it possible to offer industry unusually low electric power rates.

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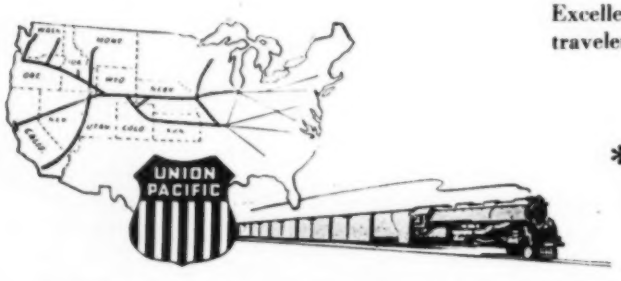


* *Address Industrial Department, Union Pacific Railroad, Omaha 2, Nebraska, for information regarding industrial sites.*

UNION PACIFIC RAILROAD

THE STRATEGIC MIDDLE ROUTE

German Synthetic Fats

SOME of the paraffins produced in Germany by the Fischer-Tropsch process were used in soap in the form of "Mersol" detergents. This technique may be the means of alleviating quickly the British shortage of fats for soap making. Mersol, a mixture of the sulfochlorinated paraffins in the C_9-C_{18} range is prepared by the Reed reaction, the action of a mixture of sulfur dioxide and chlorine on the hydrogenated Fischer-Tropsch Kogasin distillate having a boiling range of 230-320°C. Ultraviolet light is normally used as catalyst. On saponifying with caustic soda, a mixture is obtained of sodium alkyl sulfonates which have very good detergent and wetting properties.

Mersol D, which contains 82 per cent of sulfochlorides and 18 per cent of unreacted paraffins, is supplied to soap manufacturers, who saponify it themselves and use the mixture for their detergent preparations. In some cases these are compounded with ordinary fatty-acid soaps in addition. Apparently the unreacted paraffins are not separated. Of the sulfochlorides in Mersol D, 28-35 per cent are disulfochlorides which have a detrimental effect on the detergency.

Mersol H, containing 45 per cent of sulfochlorides and 55 per cent of unreacted paraffins, and Mersol 30, containing 30 and 70 per cent respectively of the same fractions, are saponified. The unreacted paraffins are separated and returned to feed stock for further treatment by the Reed reaction. The soap solution from Mersol H is concentrated to a paste with a 70 per cent Mersolate content. Mersol 30 is concentrated still further so that it can be made into bars in the normal fashion or flaked by cooling on rotating drums.

Production of fats by fungi is still in the laboratory stage, but it should not be overlooked in searching for new methods of obtaining fats.

Apart from these developments, investigations of the German fats and oils and related industries, has disclosed few new techniques. *Manufacturing Chemist 18*, 154-60 (1947).

Peroxide Values

The increase in apparent peroxide value observed in earlier iodimetric procedures when the quantity of fat taken for the determination was reduced, has been shown to be due to an increasing error resulting from further oxidation of the fat by dissolved oxygen during the determination, rather than to a decreasing error due to loss of iodine by re-absorption. In both the cold method involving standing at laboratory temperatures for one hour, and the hot method involving heating at the boiling point of the solvent for two minutes, exclusion of atmospheric oxygen is adequate and the results, within reasonable limits, are independent of the size of the sample of fat taken. O. H. Lea. *J. Soc. Chem. Ind. 65*, 286-91 (1946).

Impregnated Cloth Analysis

Cloth impregnated with hexachlorocyclohexane is extracted by acetone in a Soxhlet apparatus. The extracted compound is then dehydrochlorinated with 0.3 Normal sodium hydroxide, and the liberated chlorine titrated. Cloth impregnated with 1,2,3,4-tetrahydro-2-naphthol is extracted with ether, followed by acetylation and titration of excess acetic anhydride. J. Goldenson and S. Sass, *Anal. Chem. 19*, 320-2; 322-4 (1947).

Degreasing Wool

Investigation of the properties of aqueous solutions of fatty alcohol sulfates indicated the following results: The optimum temperature for degreasing wool soiled with olive oil, olein, and mineral oil is 50° C. The maximum cleansing action at 40° is obtained at 4-5 millimols per liter. In contrast to solutions of sodium stearate, effective cleansing is obtained throughout the pH range from 1 to 12. The maximum cleansing power is about 4 times that for soap, both occurring at pH 8. A good formula for use as a detergent is 550 grams of sulfated alcohol, 250 of soda ash, and 100 liters of water. L. R. Kramarovsky, *Industria y quim. 8*, 323-7; through *Chem. Abs.*

Detergent Analysis

Dodecyl sodium sulfate is determined by titration of the acid liberated by acid hydrolysis. In the presence of sodium sulfate, Kling and Puschel's method for separation by means of benzidine is used. Soap is detected in dodecyl sodium sulfate by adding to the aqueous solution a few drops of hydrochloric acid; turbidity appears if soap is present. A red color produced by treatment with acetone or concentrated sulfuric acid indicates saponin. A. Brunzell, *Svensk Farm. Tid. 51*, 101-6 (1947); through *Chem. Abs.*

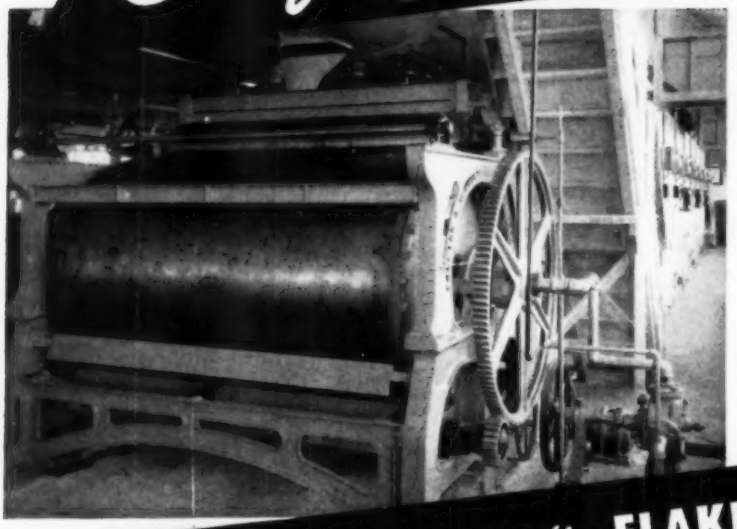
Washing Textiles

Incorporation of blue fluorescent compounds into soaps and detergents is proposed to replace the addition of blueing agents to the rinse water when white fabrics are washed. The sodium salt of 4,4′-bis(*para*-amino benzoyl amino)-2,2-stilbene disulfonic acid is incorporated into an ordinary soda soap, in proportions ranging from 0.003 to 0.06 per cent. A 0.4 per cent solution of this soap is used. The treatment is claimed to resist rinsings and subsequent washings. R. Thomas, to Lever Brothers and Unilever Ltd. British Patent No. 584,484.

Metallic Elements in Oils

Emission spectrographic techniques offer means for the determination of traces of metallic elements in fats and oils. Successful application of them should be of particular interest in research on the effect of traces of such elements on the stability and on the measurement of metallic contamination obtained from processing equipment or resulting from incomplete removal of hydrogenation catalysts. A method is described which will permit the quantitative determination of only a few parts per million of metal in 2.5 grams of oil. R. T. O'Connor, D. C. Heinzelman, and M. E. Jefferson, *J. Am. Oil Chemists' Soc. 24*, 185-9 (1947).

Carefully engineered



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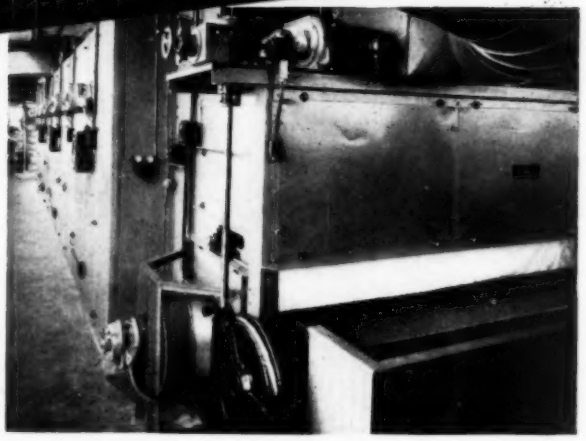
PROCTOR *Automatic* FLAKE SOAP SYSTEM



It is the combination of a carefully engineered chilling machine and well designed dryer that makes possible consistently uniform results with the Proctor flake soap system. Because the uniformity of finished flakes really starts as the hot liquid soap is first solidified—the importance of the chilling machine which performs this operation is obvious. With the Proctor system, the hopper of this chilling machine may be steam heated and equipped with an automatic temperature control for maintaining soap at a constant temperature as it goes to the chilling roll. The feed roll and the main chilling roll are set with such precision that the soap is spread to a *uniform thickness across the entire surface of the roll.* Sturdy, rigid construction helps to keep this precision setting true, even after long, continuous use. At a given point, the solidified soap is removed from the main chilling roll, in ribbons of uniform width, by means of a serrated and a plain knife or a set of marking devices and a plain knife. The accuracy with which this part of the chilling machine is engineered makes possible uniform ribbons. From the chilling machine the carefully made ribbons are carried into the three conveyor dryer and subjected to heated air, which is circulated *through* the bed of soap and across the entire width of the conveyors. Temperatures and speed of the conveyors may be controlled to suit the characteristics of the particular soap being dried.

Each phase of this system is carefully engineered in its own right—and each is designed to work efficiently with the other—thus providing a smooth functioning system that makes possible uniformly dried flakes every time. If you are not fully acquainted with the Proctor flake soap system, write for details today.

PROCTOR & SCHWARTZ, INC., PHILADELPHIA 20, PA.

PRODUCTION *Clinic*

By DR. E. G. THOMSSEN, Ph.D.

WE HAVE all heard about the bureaucrats. They are men women just about the same as all of us. The distinction they possess is that they work for some federal, state, county or city agency. Their jobs are created by an act of Congress, legislature, supervisors or city councils. Someone has to carry out the dictates of government and through aggressiveness, knowing somebody, being a democrat or republican, or through superior ratings in civil service examinations, they procure the job to carry out the provisions of the laws. They were not responsible for these statutes but since they make their living from the public payroll, most of them, at least, try to do a conscientious job.

Of course, those of us who help pay their salaries grumble because there are so many bureaucrats. We elect men to office on a platform of less bureaucracy and then find that just as long as legislation and appropriations are passed more bureaucrats are created. The large majority of us are at fault for there being so many of them because we agitate for laws to control almost everything we consider out of step with our own ideas of propriety. Once we have these laws on our statute books, it naturally follows that at times these bureaucrats interfere with the free conduct of our business. We find we must contend with government men in many ways that are objectionable to the few who had the government acts foisted upon them by the majority.

It becomes the duty of the factory men to meet these inspectors, who have the habit quite often of coming around at the most inconvenient and busy times. We may be fearful that their visits concern some violation of a statute or regulation under a law. Maybe they have discovered something that has been covered up, or a detail of the law with which there is unfamiliarity, or a regulation which has recently been revised by a higher-up. We agree that meeting government men is quite often a nuisance and there are entirely too many of them around, but we should remember that this is normally through no choice of their own. Their visits are usually routine and they are working to justify their salaries, just as most of us toil for this purpose.

For some reason or other, most men in plants are "on their high horse," when a government agent or inspector comes around. They are on their guard just as a child is when a policeman comes around after some law infraction. They fear he is out to get the company on a technicality or maybe looking for a hand-out. While it is true that these visits are at times connected with a libel, incorrect report or other complaint, the usual visit is constructive rather than destructive. These men may be very helpful, but if treated with disrespect, they may be expected to assert their authority.

Over a period of years we have met many government men who had to do with factory regulations, excise taxes, control of product qualities and labor laws. When they were treated courteously and with due respect, we cannot remember a single incident where their visit was unpleasant. There were numerous cases where an issue or argument arose but if we were wrong they patiently explained their side and if we were correct, they did not try to force their opinions upon us unjustly as one often hears is the case. They never snooped into private matters, but told us the purpose of their visit. Never did they ask for graft as is at times inferred. By cooperating with them and frankly giving information, samples or records requested, their visits were made short and businesslike. If it was inconvenient to see them when they called and the reason was given, they were willing to call at a more opportune time, unless the visits were for surprise examinations. Even in such cases, somebody could be delegated to go along with them. It was not their policy to take peccadillos into the courts but rather to settle them on an equitable basis.

Meeting city inspectors, government men and similar agents should not be the ordeal or chore so many make of it. Unless one has something to cover up, it should be nothing more than a routine matter. We must remember that these men are really our own employees and we pay their salaries by our taxes. If we don't like what they are doing, the means is open to amend or repeal the laws which keep them at work. Many a person who damns too much governmental interference in business, lacks the gumption to work for the repeal of the obnoxious laws. We do not mind the other fellow being bound by a statute but we do balk when we are restrained.

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takes great pleasure in announcing the opening of its new and enlarged offices and plant with greatly improved facilities on the thirteenth floor of

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In meeting government men the open-handed manner of the N.A.I.D.M. has much in its favor. They are treated as guests and matters of mutual interest are openly discussed. They help to set up standards for the benefit of all the industry rather than the favored few. Their ideas blend with those of the manufacturers to improve the chances of the industry and put it on the right track. They become our friends and have our confidence. Inside men who must meet government men could do well to follow such tactics and make this necessary part of their labor far more pleasant.

New Perfume Book

"NATURAL Perfume Materials" by Dr. Y. R. Naves and G. Mazuyer. Translated from first French Edition by Edward Sagarin, Givaudan-Delewanna, Inc., New York is published by Reinhold Pub. Co., New York. (Pp. 338 plus XVII illustrated, $6.75.)

The French edition of this work "Les Parfums Naturels" appeared in 1939. As the World War intervened preventing much research progress in the field of natural perfumes since then, this volume presents up-to-date information on the subject even though it is eight years old.

The book is not as voluminous as Gildermeister and Hoffman's treatment of perfume raw materials. It omits a description of a number of the commercially available products because of insufficient or indefinite data. No specialties of individual firms are included. As future editions are printed, it is proposed to enlarge the monograph section of the book in this respect. On the basis of new and important information on natural perfumes, this valuable reference book may some day replace older works as the classic in its field.

The subject matter is treated under four headings viz.:

I. A Brief History of Natural Perfumes.
II. Modern Processes of Manufacture.
III. Chemical Composition and Analytical Examination of Products of Extraction Enfleurage and Digestion.
IV. Monographs of Natural Perfumes.

Of these divisions, the latter two are of most value to the perfume chemist. Nothing particularly new is presented in the first two. While the third section is rather brief, the information and analytical methods are more up-to-date than those previously presented. The last section or the monographs of plant and animal raw materials is very useful. Those using or selling perfume raw materials will desire this reference volume mainly because of this contribution. Numerous bibliographical references are included to make the monographs the more important.

Mr. Sagarin has done an excellent job of translating. His terms accurately describe the technical subject matter. One so often finds these faulty and vague in a translation of a scientific work. The book is well printed; the illustrations are informative though ancient in some cases; the index is well arranged and the type and composition excellent. It is a valuable contribution to the literature covering the perfume field and of some value to those industries using perfume products.

Second-Hand Equipment

NEW equipment is still hard to obtain in certain directions. We recently received two lists of used machinery that contained more than the usual variety of products on hand for prompt delivery. One came from The Economy Equipment Company, E. Liverpool, Ohio; the other from Lawler Company, Metuchen, N. J. Anyone looking for a piece of equipment that is needed quickly may find it among the machinery listed.

Insecticide Information

THERE recently came into our possession ten well-written, informative booklets describing the John Powell & Co. line of insecticides and rodenticides. In the case of "Improved Pyrin #20," a forty page, spiral bound book is being distributed. The others consist of six or eight page folded circulars of uniform size. The insecticides covered are the "Pyrins," the "JP" line of DDT products, "Stimtox" and Antu. In every case the composition, advantages through use, suggestions as to formulation, type of insects controlled, specifications and labeling suggestions are outlined. The story is told in a few words and is very readable. The book on Pyrin 20 carries a number of interesting illustrations and data which add to its value. A set of these booklets is available from John Powell & Company, Inc., New York 16, N. Y. They are very good additions to the literature of any insecticide library.

Chem. Statistics Cataloged

A Directory of Chemical Statistics was recently published by the U. S. Department of Commerce, Washington. The new booklet of sixty pages lists government sources of statistical data for 1945 on some 2,500 chemicals and related materials. The materials indexed are alphabetically arranged over forty-one pages. Each name is accompanied by figures and letters, which refer to the relevant statistical publications, the type of data available therein, and the pages on which they appear. Chemical Statistics Directory No. 1 is No. 66 of the industrial series of the Department of Commerce and is available from the Superintendent of Documents U. S. Government Printing Office, Washington, D. C. Price is 15 cents a copy.

New Ungerer Catalog

A 1947 price list and product catalog was recently released by Ungerer & Co., New York. The new catalog lists ten pages of essential oils and aromatic chemicals with information about their prices, uses and packaging. Three pages are devoted to listing the products of Charabot & Cie, Grasse, France, for whom Ungerer & Co., have been exclusive American representatives for many years. The Charabot & Cie line of fluid resins, trademarked "Resinaromes", are twenty-five in number, seven of which can be supplied in a special series for soap at materially lower prices. The catalog also lists the "StaffAllen" line of nut, seed, wood and other distillates produced by Stafford Allen & Sons, Ltd., London. Among these products

PERFUMING MATERIALS

—at their best!

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also are listed nine expressed oils and six oleoresins and an almond meal packed in one pound and twenty-five pound tins. Also listed in the catalog are thirty-five members of the "Sapodors" line of perfumes for toilet soaps and allied products offered by Ungerer and Co.

New Brochure on Consulting

A 1947 edition of the Foster D. Snell, Inc. brochure under the heading of "The Chemical Consultant and Your Business" has just been released and may be obtained without charge from the above company at 29 West 15th St., New York 11, N. Y.

Chemicals Booklet Revised

A new and revised edition of the booklet, "Physical Properties of Synthetic Organic Chemicals," was issued in July by Carbide and Carbon Chemicals Corp., New York. The twelve-page booklet, designed as a condensed guide for users of organic chemicals, contains data in tabular form on applications and physical properties of more than 175 synthetic organic chemicals. The following products are covered: acetals, acids, alcohols, aldehydes, anhydrides, hydroxyethyl cellulose, chlorine compounds, esters, ethers, glycols, hydrocarbons, ketones, plasticizers, and wetting agents, as well as chlorine, nitrogen and sulfur compounds.

Bulletin on Degreasers

A new bulletin, A-10, was made available July 10th by Gaybex Corp., Newark, N. J., describing the company's line of degreasers, safety solvents, detergents and penetrants.

TGA Papers Published

Proceedings of the Scientific Section of the Toilet Goods Association, Inc., New York, containing papers read at the May meeting were recently published. The proceedings, presented in a 45-page booklet, offer ten technical papers and among them are three of particular interest to the soap and sanitary chemicals industries: "Factors Affecting the Zone of Inhibition Antiseptic Test as it applies to Toilet Goods Preparations", by Arthur R. Cade; "Skin Irritation Studies on Selected Subjects," by Grace R. Durfee; and "Some Studies in the Corrosion of Collapsible Tubes," by M. Schor and W. W. Sweet.

New Reservoir Applicator

Garnet Chemical Company, Allentown, Pa., has recently started production of a new reservoir type applicator for use in applying floor dressings and liquid waxes. The flow of the wax or seal from the heavy gauge steel tank to the felt applicator pad is controlled by a valve that can be set to dispense the exact amount of material desired. The tank has a capacity of three quarts. The felt pads are replaceable and the applicator is equipped with 4½′ handle. The manufacturer states that the product is being sold through manufacturers and distributors of floor products.

Bulletins on Chlordane

Several bulletins were recently issued by Julius Hyman and Co., Denver, offering information on the company's technical chlordane compound marketed under the brand name "Octa-Klor". Technical supplement #1, is a summary of the effectiveness of chlordane on a number of insects, alphabetically listed, and includes some information on dosages and applications. Technical supplement #201 is on the control of grasshoppers, lygus bugs, and alfalfa weevils with chlordane formulations, and #203 has to do with livestock parasite control. Technical supplement #101 contains brief facts of general interest pertaining to chlordane. It is stated that 2% of chlordane in the proper base is recommended for residual control of most household, institutional, and industrial insects.

Bulletins on Floor Enamel

Six new bulletins were recently released by Goodyear Tire & Rubber Co., Akron, describing the properties of the company's floor enamel, "Pliolite S-5", and suggesting various formulations for its use. They are: #501—"Formulation of Pliolite S-5 Concrete Floor Enamel with Titanium Dioxide Ground by Conventional Methods", #502—"Formulation of Gray Pliolite S-5 Concrete Floor Enamels with Lithopone", #503—"Additional Plasticizers and Modifying Agents for

These 30-gallon, all-aluminum chemical drums recently announced by Reynolds Metals Co., Louisville, were designed specifically for shipping hydrogen peroxide. They are 99.6 per cent or more aluminum and are suitable for transporting and storing a wide range of other chemicals, particularly fatty oils and perfuming materials. They weigh 34 pounds, are 33½ inches in height and 21 inches in diameter over all. Top end of the drum is equipped with a top bung and a cap. There is also a side bung with a 2-inch opening. These drums are easily stacked.

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(A Water Softener)

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2. Prevents lime soap precipitation in hard water.
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7. Does not cloud or precipitate even after long standing.

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Pliolite S-5", #505—"Solution of Pliolite Base 46B S-5", #506—"Additional Pliolite S-5 Concrete Floor Enamel Formulations".

Because of the shortages of various additives, these formulations have been devised to permit considerable latitude in the use of alternate products, particularly with reference to pigments. Suppliers of the various components are also suggested.

Cosmetic Cream File Folder

Of interest to manufacturers of emulsion and non-emulsion cosmetic creams is a new technical data file (F-3) prepared by L. Sonneborn Sons, Inc., New York, which describes the use of highly refined white mineral oil and U.S.P. petrolatums as ingredients in the preparation of cosmetic specialties. The technical data file, standard file cabinet size, lists the properties of white oil and petrolatums which are important in cosmetic manufacture. The file also contains several formulas which can be adapted or modified to meet individual specifications for baby creams, emollient creams, hand creams, face creams, pigmented powder creams and others.

New Label Adhesive

A new bottle-labeling resin adhesive, said to be highly resistant to both water and humidity, was recently announced by National Adhesives, Inc., New York. The adhesive is especially effective for labels on glass containers exposed to moisture in bathrooms and laundries. The product is of medium consistency and is said to be suitable for semi-automatic labeling machines as well as for hand labeling. The product, white in color, dries to a transparent colorless film which is said to stand up well under exposure to steam or high humidity.

Miranol Detergent Booklet

A new 32-page booklet on synthetic organic detergents was recently issued by Miranol Chemical Co., Milltown, N. J. Realizing that no single synthetic detergent can solve all product formulation problems, the authors describe ten Miranol detergents and wetting agents which meet the requirements for almost all applications of the synthetic detergents. Their limited number and wide range of usefulness simplify the choice and use considerably. The large number of uses for the products will likely raise questions in the readers' minds and the technical department of the company is prepared to answer any questions regarding the uses suggested. Most of the Miranol synthetic detergents are sulfonated fatty acid amide derivatives, some of which are combined with an aryl alkyl sulfonate and are "anionic" active. Miranol QCK and Miranol OH are modified lauroyl imidazolene carbonates and hydroxy acetates, respectively, and are "cationic" active.

Hydrogenation Service

A new bulletin, #8, describing the oil hydrogenation service available through the Hooker Electrochemical Co., Niagara Falls, N. Y., was recently released by the company. Hooker has sizable hydrogenation facilities at their two plants, at Niagara Falls and Tacoma, and in addition to providing hydrogenation to a customer's specifications on a conversion basis, the company also produces a number of hydrogenated compounds such as cyclohexanol, methyl cyclohexanol, hydrogenated castor oil and piperidine.

Specializing in high pressure hydrogenation at 150 to 2500 psi and up to 250° C., and low pressure work up to 150 psi and to 200° C., the facilities provide for processing a few drums or carload lots. Raw materials are delivered to the plant with freight charges prepaid and the finished product, with catalyst filtered out, is returned freight collect in cleaned raw material containers provided by the customer. Commercial scale custom hydrogenation charges are usually based on a fixed fee per pound of material processed. Among the typical hydrogenations done by Hooker are: aldehydes to primary alcohols, ketones to secondary alcohols, oximes to amines, nitriles to amines, aromatics to alicycylics, phenol to cylcohexanol, aliphatic unsaturates to saturates, and hydrogenation of heterocyclics.

Plastic Replaces Solder

A metal container using a new plastic material on the side seams instead of solder has been announced by the American Can Co., New York. The plastic is a water-white, taste-free, organic compound, tough and impermeable to moisture, and was used by the Navy to line fresh water tanks aboard vessels. The new plastic sealed containers may be fully decorated by lithography completely around the outer wall surface. The new type cans will be useful in the packaging of waxes and chemical specialty products of the type that will not generate pressure within the can or require vacuum packing or further processing.

Issues Fatty Acid Booklet

Armour & Co., Chicago, recently issued a new technical booklet titled, "The Handling, Sampling and Testing of Fatty Acids," covering the following subjects: storing and pumping fatty acids, process equipment, standard sampling methods and equipment, tests commonly used for fatty acids and their meaning. The last page of the booklet features a color conversion chart making possible a comparison of color intensity of thirteen different color matching systems.

New Corrosion Bulletin

A new bulletin titled, "Corrosion Resistant Materials and Equipment," was released July 15th by U. S. Stoneware Co., Akron, Ohio. The bulletin was prepared with a view toward helping those interested in the selection of proper or suitable corrosion resistant materials and equipment, and offers information about how such equipment is used for combatting corrosion. Among the topics covered by the bulletin are acid pumps, corrosion resistant cements, "Duralon," gasketing, pipe and fittings, suction filters, tank linings and valves, as well as drum rollers and tumblers. Copies of the bulletin may be obtained from the company by writing for Bulletin K.

Investigate

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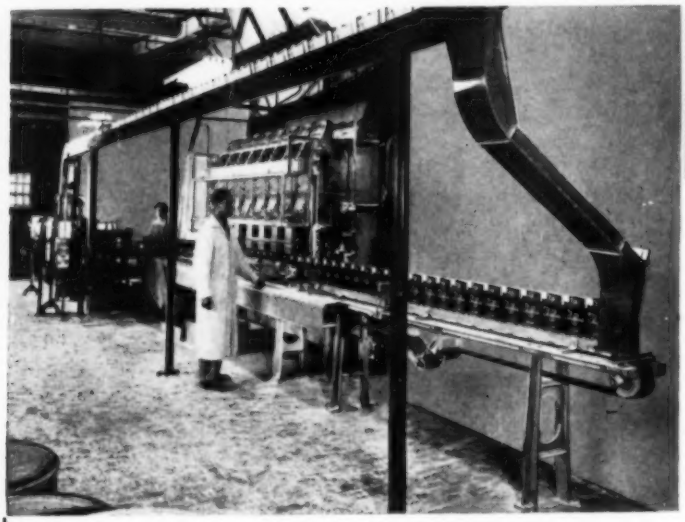

Above — Model A8A Elec-Tri-Pak with Model SO synchronized conveyor at an Armour and Company plant handling 14 oz. cartons Chiffon Flakes at 70 to 80 per minute.

PACKAGES 80 PER MINUTE *Automatically!*

HERE'S the newest, fastest, most accurate machine on the market for packaging soap flakes automatically—the Triangle Elec-Tri-Pak Vibratory Feed Weigher—a high-speed weighing and filling machine that really increases production, cuts costs and saves waste of material!

The Model A8A-SO, illustrated, weighs, fills and plunges soap flakes at a rate up to 40,000 cartons per day depending on size. Other models for lesser production and applications.

No other packaging machinery investment offers a comparable return. Write for new illustrated brochure.

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Weighers . . . Fillers . . . Carton Sealers

PRODUCTS AND PROCESSES

Cashew Shell Detergents

Water-soluble products useful as detergents are prepared from cashew nutshell liquid by mixing it with an unsaturated fatty compound such as oleic acid, and sulfonating the mixture at temperatures below 50° C., or by condensing it with a phenolsulfonic acid at 95-130° C. E. H. Freund and P. Mahler, to General Foods Corp. U. S. Patent No. 2,415,347.

French Soap Process

A flow sheet of a method for continuous saponification comprises special proportioning pumps for lye and fat, a reaction conduit, a holding tank for crude soap, proportioning pumps for crude soap and brine, a decanter, a holding tank for purified soap, and continuous 2-stage equipment for neutralizing excess alkali. The decanter contains 4 compartments supplied with stirrers and means for completing saponification and salting out the glycerine stock. Other accessory equipment includes continuous means of acidifying glycerine stock and filtering it. F. Lachampt. *Inds. corps gras* 3, 4-12 (1947); through *Chem. Abs.*

Silver Polish

Abrasives for silver polish should be very fine and free from grit. Hard and soft soaps, ammonia, and triethanolamine soaps are employed as dispersing and cleansing agents. Glycerine helps to retard the drying out of paste polishes and is sometimes useful in liquids to increase the viscosity slightly and improve wetting action. The following basic formula furnishes an example:

	parts by weight
Hard soap	14
Diatomaceous earth	35
Soda ash	0.5
Trisodium phosphate	0.5
Glycerine	10
Water	40

Many variants can be made on this, including the use of a little mineral oil and different soaps and abrasives. Traces of pink, yellow, or other soluble color may be incorporated. Suitable perfume materials include mirbane, safrole, methyl salicylate, pine oil, citronella oil, cedarleaf oil, or relatively inexpensive prepared perfumes. J. M. Vallance, *Manufacturing Chemist 18*, 124-8 (1947).

Heavy Metal Soaps

An organic acid ester is heated while in contact with a heavy metal in the presence of steam and oxygen, to produce heavy-metal soaps. A. G. Weber and C. H. Hamblet, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,416,074.

Refining Oils

Crude glyceride oils are refined by precipitation of the gums with an aqueous medium and separating at a temperature of 90-140° F. The degumming operation materially reduces the color and acidity of the oil. The oil is then treated with a solvent or solvent mixture which selectively dissolves fatty acids in preference to glycerides. A temperature is found in which two phases form, one containing the free fatty acids and the other the oil phase. These are then separated by decantation or centrifuging. Furfuraldehyde and isopropanol are the preferred selective solvents. Acidity and color may be further reduced by a mild caustic washing operation. H. C. Black and W. F. Bollens, to Industrial Patents Corp. U. S. Patent No. 2,416,146.

Solvent Extraction

An efficient method for extracting oils from solids containing appreciable amounts of water is to agitate an aqueous slurry of the fatty material in the presence of a fat solvent while heating to a temperature just below the boiling point of the solvent. The resultant emulsion of solvent, water, and oily material is broken by reducing the agitation while maintaining a high temperature. Two layers form. The solvent layer is separated and the fat recovered by removal of solvent. The preferred solvents include petroleum fractions boiling between 105 and 250° C., higher-boiling ethers and ketones, xylene, and chlorobenzene. E. N. Mortenson, to Industrial Patents Corp. U. S. Patent No. 2,416,196.

Agents in Cosmetics

Some of the newer surface-active agents, particularly those such as glycol or glycerol esters of fatty acids, and modified sugar alcohol esters, find a very useful place in cosmetic formulation. For example, some are excellent solvents for bromo acid and the various pigments used in make-up preparations. In addition to improving the finished product by affording a finer dispersion of the pigments and making for a smoother, more uniform application to the skin surface, the manufacturing process is also improved by a material reduction in milling and grinding time. In one instance, the grinding time for pigments in a nail enamel formula was reduced from 48 hours to less than 2½ hours. The types of agents mentioned are high in emulsifying and dispersing power.

A general discussion and classification of surface-active agents is given. Four types are listed, (1) soaps, (2) sulfated or sulfonated compounds, (3) monofatty acid esters, and (4) nitrogen compounds. I. R. Hollenberg, *Soap, Perfumery, Cosmetics 20*, 562-6 (1947).

Recovery of Wool Grease

Stream pollution from wool washing may be very severe, so that a recovery plant should be used for treatment of the waste effluent. A flow diagram shows a process used for removing wool grease from 20,000,000 gallons of effluent daily, in which precipitation tanks, biological filters, sulfuric-acid treatment, grease removal, and distillation are utilized. The grease recovered proved useful in rust preventives, magnesium-soap vehicles, and for other purposes. W. H. Hillier and S. G. Campbell. *Synthetics and By-Products 8*, 329-34.

MATERIALS

for

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COSMETICS

SOLE AMERICAN REPRESENTATIVES FOR

TOMBAREL FRERES

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SPECIALTIES FOR SOAPS

ESSENTIAL OILS	RESINOIDS
Lavender	Ambranum
Lavendin	Benzoin
Geranium	Ciste
Patchouly	Labdanum
Ylang Ylang	Mousse de Chene
Vetiver, etc.	Styrax, etc.

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The Dietert Moisture Teller is an instrument of laboratory precision which is successfully operated anywhere in the plant by non-technical personnel. By this means results are determined quickly enough to provide adequate control of many processing operations.

The amount of moisture in granular, fibrous, or crystalline materials is determined accurately, safely and without resorting to charts or involved mathematical calculations. An outstanding advantage of this equipment is that it does not lose its calibration—it is always dependable.

The Moisture Teller is available in five portable models for samples from 1 to 2000 grams in weight, each compact, self-contained and sturdily constructed.

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NEW PATENTS

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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,421,507, Horticultural Spray Oil, patented June 3, 1947 by Paul R. Jones, Piedmont, Calif., assignor to Shell Development Co., San Francisco. A clear mineral oil horticultural spray containing a dissolved minor proportion exceeding its normal solubility in said mineral oil of rotenone and a minor but rotenone-solubilizing proportion of a mixture of polychlorinated alkanes and alkenes of from 3 to 4 carbon atoms.

No. 2,421,569, Insecticide, patented June 3, 1947 by Frederick B. La Forge, Arlington, Va., and William F. Barthel, College Park, Md., assignors to United States of America, as represented by the Secretary of Agriculture. An insecticidal composition comprising pyrethrum and 3,4-methylenedioxybenzyl n-propyl ether as a synergist therefor.

No. 2,421,570, Insecticide, patented June 3, 1947 by Frederick B. La Forge, Arlington, Va., assignor to United States of America, as represented by the Secretary of Agriculture. An insecticidal composition comprising pyrethrum and alpha-(3,4-methylenedioxyphenyl)-tetrahydropyran as a synergist therefor.

No. 2,421,703, Detergent Paste, patented June 3, 1947 by Jonas Kamlet, New York, assignor to Boyle-Midway, Inc., New York. A detergent paste comprising from about 22 per cent to about 33 per cent trisodium phosphate calculated as the anhydrous salt, the trisodium phosphate being in a solid, finely divided, uniformly dispersed form, devoid of harsh abrasive properties, a surface-active material capable of solubilizing alkali-earth metal compounds under detergent conditions and chosen from the group of compounds consisting of sulfonated and sulfated non-soap detergents, an emulsifying agent chosen from the group of compounds consisting of the salts of aliphatic acids containing from 7 to 22 carbon atoms with the alkali metals and the primary, secondary and tertiary hydroxyalkylamines in an amount sufficient to maintain the ingredients of the mixture in dispersed state, and water in an amount insufficient to dissolve all the trisodium phosphate in the mixture at room temperature but sufficient to impart to the mixture a pasty consistency.

No. 2,422,106, Santonin-Phenothiazine Vermifuge, patented June 10, 1947 by Raymond E. Lubbehusen, Webster Groves, Mo., assignor to Ralston Purina Co., St. Louis. A vermifuge unit for administration to pigs of body weight in the range of 35 to 65 pounds to effect removal of ascarid worms, the ascaricide ingredients of said unit being approximately 1¼ grains of santonin and not less than 4 grams of phenothiazine.

No. 2,422,145, Essential Oil Compositions, patented June 10, 1947 by Walter A. Taylor, Killingworth, Conn., assignor to Atlas Powder Co., Wilmington. A composition comprising a clear, stable solution of a quantity of an essential oil and at least an equal quantity of a water-soluble hydroxy polyoxyethylene ether of a partial higher fatty acid ester of a low molecular weight polyhydroxylic compound, the said solution being capable, upon dilution with water, of forming a clear, stable aqueous dispersion of said essential oil and hydroxy polyoxyethylene ether.

No. 2,422,255, Rinse Compositions, patented June 17, 1947 by Franklin T. Peters, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington. An aqueous germicidal rinse composition comprising, approximately, one part of 1,3-dichloro-5,5-dimethylhydantoin, one part of 5,5-dimethylhydantoin, two parts of sodium dodecyl sulfate and ten parts of sodium dihydrogen phosphate.

No. 2,422,794, Extraction of Saponifiable Acids, patented June 24, 1947 by Wilmer E. McCorquodale, Jr., Ardentown, Del., and Lloyd G. Magill, Chester, and James D. Hagy, Wallingford, Pa., assignors to Sun Oil Co., Philadelphia. The method of separating saponifiable acids from a mixture of saponifiable acids and hydrocarbon oils which comprises treating said mixture with an aqueous solution of an alkali metal hydroxide in substantial excess of the amount required for complete neutralization of the acids, thereby to convert the aforesaid acids to alkali metal soaps and form a mixture comprising an oil phase and an aqueous phase containing excess alkali metal hydroxide, the ratio of said solution to acids and

When right side up . . . . . it looks like this!

Our apologies to American Dispenser Co., New York, for being an accessory before the fact in the upside down printing of the illustration of their combination shelf and dispenser in our June issue of SOAP and SANITARY CHEMICALS. Naturally enough the valves are located at the bottom of the shelf. If you haven't a copy of the June issue handy, but want to check on the way the shelf-dispenser looked as printed upside down, you can get the same effect quite readily by standing on your head.

Another *Ospeco* Product

Try Our

SOLIOL

BASE N-60

A refined, semi-liquid petroleum sulfonate

An Excellent

SYNTHETIC DETERGENT

and Powerful

EMULSIFYING and WETTING AGENT

Reduces Surface Tension

For cleaning metals, glass, dairy equipment, textile processing, ore processing, insecticide, herbicide, cutting oils, and all types of industrial cleansers. Has good stability, and cleans well in hard water, acid, or alkali. Active ingredients can be varied to meet purchaser's requirements.

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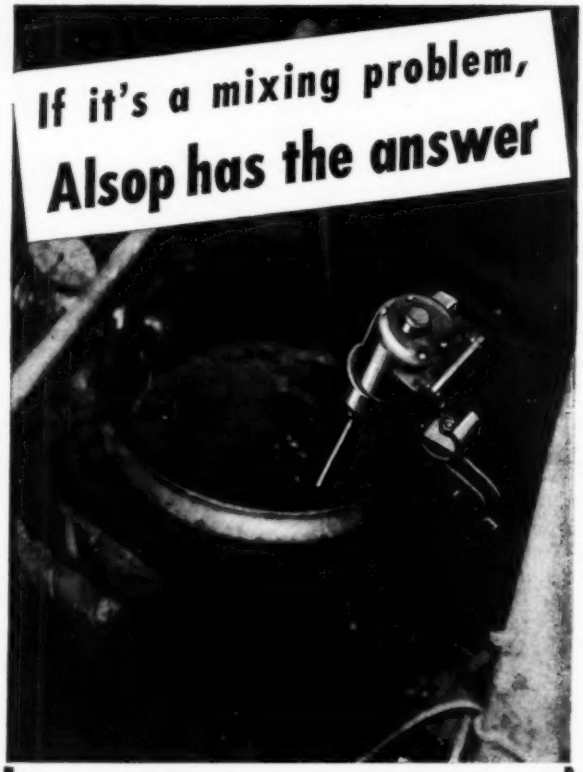
PLANT—BAYONNE, N. J.

If it's a mixing problem, Alsop has the answer



For every liquid mixing job

For over 25 years, processing men have relied on the consistent high standard of Alsop *"Hy-Speed"* Mixers and Agitators—and on the technical service of The Alsop Engineering Corporation to help solve their mixing problems.

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Whether your problem is mixing, blending, suspending or dissolving, you can handle it simply and economically with an Alsop *"Hy-Speed"* Mixer or Agitator.

Perhaps we can help you solve your mixing problem; we'd like to try.

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the alkali metal hydroxide strength of the solution being such that within a given temperature range a predominant proportion of the soaps will be soluble in the aqueous phase while within a substantially lower temperature range a predominant proportion of the soaps will be insoluble in the aqueous phase due to said excess of alkali metal hydroxide, separating the oil phase from the aqueous phase while the phases are within said higher temperature range, directly cooling the aqueous phase to within said lower temperature range thereby to precipitate a predominant proportion of the soaps, and separating the precipitated soaps from the resultant aqueous layer.

No. 2,422,919, Manufacture of Chlorinated Polythenes, patented June 24, 1947 by James Robertson Myles and Philip James Garner, Northwich, England, assignors to Imperial Chemical Industries, Limited. A process for the manufacture of chloropolythene which comprises dissolving polythene in boiling carbon tetrachloride, cooling the resulting solution with rapid stirring to a temperature of about 25°C., displacing the air in the said mixture with an inert gas during the said boiling and cooling whereby a suspension of polythene is produced, replacing the said inert gas by chlorine containing about 0.1 per cent of oxygen, illuminating the resulting mixture with artificial illumination rich in green and yellow light of 4785 A. and below but not rich in ultraviolet radiation, removing at least a part of the heat of the resultant reaction, continuing the introduction of the said chlorine until a chloropolythene containing about 50 per cent by weight of chlorine is obtained, and thereafter separating the said chloropolythene from the resulting reaction mixture.

New Valve Catalog

Catalog #47 on stainless steel valves and fittings was recently issued by Alloy Steel Products Co., Linden, N. J. Stainless steel and resistant alloys are especially useful for soap and fatty acid processing where high temperatures are concerned. The booklet discusses corrosion in general and the corrosion resistant properties of the "Aloyco" brand of alloys are presented. Pictures and data are given on gate, globe, angle, needle, Y-, and swing check valves as well as for sampling, flush-bottom tank and split wedge gate valves. Fittings are discussed and pictured, and the names of valve parts are listed together with their pictures in a typical valve assembly. An application data table provides a means of selecting the proper types of valves and fittings from information on temperature and corrosive medium applicable.

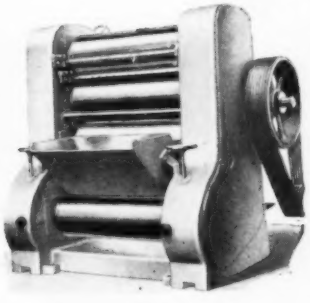
New Steam Cleaner Tools

Two new products for use with the new highpressure Jenny cleaner now in service with the automotive industry were recently announced by Homestead Valve Mfg. Co., Coraopolis, Pa. A handy 4-wheel repair shop dolly for carrying machine and engine parts for the repair job to the wash rack, known as the "Cleantote," has a shallow metal tray and wire mesh cleaning basket so that washing and rinsing of parts may be carried on without removing them from the carrier.

A new high-pressure flushing nozzle for internal cleaning of radiators and engine blocks by the high-pressure Jenny steam cleaner will fit most sizes of radiator hose and affords a positive seal without use of clamps. The flushing nozzle is connected sim-

THE IMPORTANCE OF SOUND ENGINEERING

BROOKLYN BRIDGE completed in 1883 was the first of its type. It was for many years the longest suspension span in the world. That this venerable structure is still in useful service after 64 years bears witness to the soundness of its engineering.



Soap Makers who have used Lehmann Mills over the years will likewise testify to the engineering perfection they embody. In the long and trouble-free service they give and in the quality of the work they turn out under the heaviest of schedules, these superb Lehmann machines justify the care and knowledge that go into their making.

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Acts as anti-irritant.

Counteracts free alkali.

Facilitates milling and plodding.

Improves texture and appearance.

Helps develop richer creamy lather.

Minimizes defatting effect.

Helps relieve dry skin.

The all-around ideal superfatting agent.

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¼ oz. to 10 pounds

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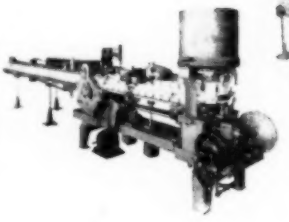
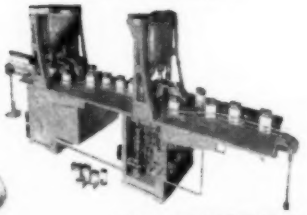


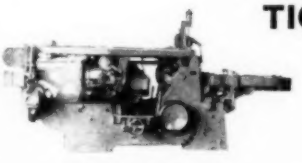


Several Models

NEVERSTOP CARTON FILLER and SEALER

MATERIALS
All Food and Grocery Products

CAPACITY
Maximum Carton—10½" x 6½" x 4½"
Minimum Carton—9¾" x 1⅝" x ¾"
PRODUCTION SPEED: 40 to 120 per minute



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TIGHT WRAPPING MACHINE

AUTOMATIC
Tight wraps the package after it is filled and sealed.
Makes attractive, sift-less, tight-wrapped package.
MATERIALS: All products in cartons

CAPACITY
Maximum Carton—10" x 6½" x 4"
Minimum Carton—3¾" x 1½" x 1"
Production Speed: 60 to 70 per minute

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ply by replacing the pipe at the Jenny gun handle with the threaded end of the hose to the flushing nozzle.

Folder on Cocoa Butter Soap

A new folder pointing out interesting facts about the use of cocoa butter in toilet and shaving soaps was recently issued by Hershey Estates, Hershey, Pa. Cocoa butter is pointed out as a desirable superfatting agent for soaps because of its emollient properties due to its unusual chemical composition and because the oil is pressed from the cooca bean, the only oil-bearing vegetable which is roasted before pressing, which fact is said to increase its natural resistance to rancidity.

New Catalog on Fillers

A new catalog detailing a complete line of powder-filling machinery was issued in July by Harold W. Baker Co., Bryn Mawr, Pa. Included is information about automatic, semi-automatic and manual fillers, as well as photographs, performance data, and specifications for all equipment available. In addition to the company's complete line of powder filling machines, a personalized service in the design and manufacture of special purpose, custom-built machinery is announced.

New M M & R Price List

A new price list and catalog of aromatics, balsams, oleoresins, essential oils, and basic perfume products was issued in July by Magnus, Mabee & Reynard, Inc., New York. The new catalog of prices for the third quarter of 1947, interestingly illustrated with production scenes, lists over 40 pages of the company's products.

Evans Exec Visits U. S.

Thomas G. C. Hendy, chairman of the board, Evans Chemicals Ltd., is in the United States for technical discussion with Evans Chemetics, Inc., New York. While the English company is planning considerable expansion in its chemical manufacturing, Mr. Hendy is also meeting with American cosmetic manufacturers who wish to have their products manufactured in England for distribution in Europe.

Adds to Pumice Plant

William R. Rogers, Beverly, Mass., importer and refiner of Italian pumice, recently announced the completion of an addition to his plant. The plant is said to be the largest of its kind, refining all grades of Italian pumice.

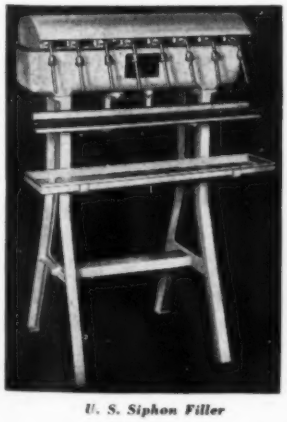
New "Target" Price List

A new price list was recently issued by Chemical Manufacturing and Distributing Co., Easton, Pa., on their "Target" line of soaps and sanitary chemicals. Soap powders of the "Target" brand now contain cocoanut oil and are packaged in new type containers. The company also announced that it is the sole manufacturer of deodorant liquids for the "Janitizer" deodorant liquid dispenser.

TWO UNBEATABLE FILLERS

LOWER YOUR FILLING COSTS **with this U. S. Siphon Filler. Not only is the machine reasonably priced, but it cuts down filling costs by maintaining rapid, accurate, and steady performance without tedious delays for adjustments. Fills every type of free flowing and low viscosity liquid into a wide range of containers up to gallons.**

Anyone can operate the U. S. Siphon Filler. It fills automatically — only containers are moved manually. Requires no power. There is no upkeep cost; no springs, washers, flimsy rubber tubes, or frail parts to maintain. Write for Bulletin.



U. S. Siphon Filler

MOST POPULAR FILLER IN AMERICA. **Rapid filling of any type liquid or semi-liquid is made possible by the new U. S. Semi-Automatic Model B-2 Vacuum Filler. No lost motion, idle machine time or product waste! Advanced design simplifies automatic filling of 2 containers simultaneously. Manual operation is limited to movement of containers. Fills directly from any size storage container up to barrel size. Interchangeable filling stems. Fills AGST and ordinary neck opening containers up to 4" diam.**

This new filling unit is invaluable to both small plants of hand-filling capacity and to larger plants as a stand-by unit to maintain production when peak volumes overtax regular filling equipment. It is portable, plugs into electrical outlet for quick use anywhere. Write for Bulletin.

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Model B-2 Semi-Automatic Vacuum Filler

Fully Automatic U. S. Rotary Vacuum Fillers are made in many sizes. Can be operated at variable speeds, with capacity up to 300 containers per minute. Write for Bulletin.

Fitch Asks Shampoo Code

F. W. Fitch Co. recently filed a motion with the Federal Trade Commission with a view to establishing industry-wide standards and practices in the shampoo industry. Last year a complaint was issued against Fitch by FTC accusing the company of misleading its customers by advertising that dandruff is an abnormal condition that can be cured by using the company's product, "Fitch's Dandruff Remover Shampoo." FTC's decision was that the shampoo was merely an effective cleansing agent and, although its alcohol and soap content act as a mild antiseptic, it does not, as represented, kill germs normally present in the scalp nor does it antiseptically rid the scalp of all germs. The complaint also contended that the shampoo may be harmful when used on babies' scalps.

Fitch has asked that, before action be taken in its case, the whole industry be studied to determine whether approximately 100 of its competitors may not also have violated the FTC Act by similar claims. If such is the case, it is expected that Fitch will ask that complaints be issued against the companies and that hearings on the violation include all defendants simultaneously. If it is determined by FTC that all companies are equally guilty of violation of the act, the remedy could then be applied on an industry-wide basis. Fitch further asked that pending action against the company be stayed until the motion is given consideration by the Commission. The company claims that the issuance of the complaint last year has placed them in an unfair competitive position which has resulted in damage to its business inasmuch as no similar action has been taken against competitors.

Blue-Dew Buys Suds-Up

Suds-Up Corp., Buffalo manufacturer of detergents for household and dairy use, was purchased in July by the Blue-Dew Corp., Buffalo, according to an announcement by Blue-Dew Corp. president, Frank Genco. The newly acquired company will be known as the Suds-Up division of Blue-Dew, and will be operated under the management of Earl Care, former president of Suds-Up, which was formed two years ago. Blue-Dew Corp. was formed fourteen years ago and produces a water softening compound.

ARCH PAYNE

Florasynth Appoints Payne

Arch Payne, formerly in charge of southern sales for Florasynth Laboratories, Inc., New York, was appointed general sales manager of the company on July 1st. He will make his headquarters at the New York offices and plant. Mr. Payne attended Liverpool College and the University of South Dakota, and has been in the drug, cosmetic and allied industries for the past twenty-five years.

Germicidal Hand Cleaner

A new hand cleaner with germicidal properties is now on the market, according to an announcement in "Chemi-Notes," house organ of Baird & McGuire, Inc., Holbrook, Mass., manufacturers of the new product. An ingredient that will kill organisms causing skin diseases resulting from fungus infections has been incorporated and the new product, trade marked as "Hand Cleaner," is available in 8 oz. and 16 oz. bottles.

Fred Hild Re-elected

Fred Hild, Hild Floor Machine Co., Chicago, was re-elected for a second term as president of the Floor Machinery Mfrs. Assn., at a meeting held in New York recently. Arthur Boller, S. C. Lawlor Co., Chicago, was elected secretary.

Perfuming Course Offered

A course in aromatics is to be offered this fall at New York University. The course is to be on the evaluation and olfactory testing of perfuming materials, and is intended as a practical laboratory class for buyers and users of perfume oils. The instructor will be Samuel Klein, perfumer for Synfleur Scientific Laboratories, Inc., New York. So far as is known, this is the first time that the University has offered to commercial users a course of this type with a professional perfumer in charge. Several materials will be used for basic training of the sense of smell. Standards of comparison will be established through the study of ten odor types in various price ranges. Threshold values and blotter tests will be developed. Requirements of special purpose perfumes will be considered, as well as the influence of recently developed synthetics on perfumes of the future. Some previous experience with perfume oils will be required of registrants. The class will meet Tuesday evenings, 8:00 p.m. thru 10:00 p.m., starting Sept. 30th and continuing for fifteen sessions. A registration fee of $30 will be charged, plus a $10 laboratory fee. Additional information about the new course may be obtained from Professor S. G. Roth, division of general education, New York University, Washington Square, New York.

Correction on Gammexane

H. Taylor and J. Frodsham, Imperial Chemical Industries, Ltd., The Frythe, Welwyn, Herts, England, write that in studying the toxic effects of "Gammexane" they fed rats doses of 500 mg. per kilogram of body weight daily (not 50 mg. as was reported in the April issue). Appetites remained good during the 57 days of the experiments and no toxic symptoms of any kind were noted.

Solon Palmer Moves

Solon Palmer, New York manufacturer of perfumes, soaps, and toilet preparations, has moved its general sales offices and factory to 39 Division St., Newark 2, N. J.

SANITARY PRODUCTS

A SECTION OF SOAP

AS FAR as household insecticides are concerned, 1947 has been the second consecutive poor year for sales. To us, this is the No. 1 problem of the industry right now. All other problems must, of necessity, be secondary because if sales of insect sprays and other household insecticides remain below normal as they have been, the industry cannot long continue to exist in anything like its present form. A dozen facts about the market and the rate of consumption which should be known are not known. An immediate study of the situation with an eye on the 1948 season might help to forestall another bad year. To what better purpose might some of the funds now bulging the sides of NAIDM coffers be put? In reality, an emergency exists and should be met as such.

PYRETHRUM farmers of East Africa have been advised by their marketing association to consider accepting a lower price even before the end of 1947 when the current price arrangement expires. World surplus stocks of pyrethrum are growing. Competitive synthetic organic chemical products have invaded the old pyrethrum market to considerable depth in several directions. As the first step to maintain its place in world insecticide markets, we feel that this advice to the growers is sound and should be heeded.

For the past year, we have maintained that the high prices of pyrethrum could do little else than react to the long-range disadvantage of this important insecticide material. Accordingly, we believe that to adhere doggedly to the old high prices even this year could menace the future of the industry in East Africa. Always, we have felt that there is no complete substitute for pyrethrum, and that it is a necessity in the overall insecticide picture. But, that necessity has been shown to be flexible. At a price, manufacturers of finished insecticides can and have got along without it. Hence, we sincerely hope that the farmers will follow the wise counsel of their marketing association.

HOPE springs eternal in the breast of every manufacturer, hope that when he prints important use directions on the label of his product the housewife or other consumer will read and follow those directions. But time and experience have disillusioned most manufacturers and they realize the futility of their hopes. The completeness of this futility was emphasized to us just recently. Picking up a sprayer at home ordinarily containing the customary oil-base insect spray, we discovered that it had been filled with a water solution of a silicofluoride moth proofer. Examining the bottle of moth product, we noted with interest that the largest and blackest type on the front label with the exception of the product name stated: "This product *not* to be sprayed."

PUBLICATION of judgments under the Insecticide Act is always enlightening. Looking over the latest list of cases, we conclude that with the exception of the small group of chronic violators, most judgments result from ignorance, often from the enthusiasm of advertising copy writers being carried over onto product labels. We feel that most of the violations do not come from intentional attempts to break the law, but rather from a lack of knowledge of the law. Some manufacturers do not even know that the insecticide law applies to their products. For these latter, there is little that can be done until the lightning hits. But for others in the industry, we recommend regular reading of published judgments as an excellent guide in avoiding trouble.

NEW INSECTICIDE ACT

By C. C. McDonnell

The new Federal Insecticide, Fungicide and Rodenticide Act is interpreted by a former chief of the Insecticide Division, Office of Marketing Services, U. S. D. A., in charge for many years of administering the Insecticide Act of 1910.

THE new Federal Insecticide, Fungicide, and Rodenticide Act, the purpose of which is to regulate the marketing of economic poisons and devices, was enacted by the present Congress, and signed by the President on June 25, 1947. It replaces The Insecticide Act of 1910, which became effective on January 1, 1911 and has been actively enforced since that time. During this period great changes and advances have been brought about in this field as a result of researches by scientists of the Federal and State governments and by those of private industries, and it was apparent to all that a revision of the Act of 1910 was necessary to meet present day conditions. Furthermore, it was recognized that other products for controlling pests inimical to the pursuit of agriculture and related industries needed to be brought under regulatory supervision.

The Bill just enacted is the result of the joint efforts of Government officials and members of the industries involved. While some differences of opinion exist as to the necessity or desirability of some of its provisions, and some concessions and changes in its original draft were agreed to, the record, as stated by the Chairman of the House Committee on Agriculture in his report on the Bill, "demonstrates remarkable unanimity of opinion among farm organizations, industrial groups, entomologists, and government officials, showing the need for legislation of this character."

The principal changes and additions in this Act over the law that it replaces are:

1. An extension of its provisions to include rodenticides, herbicides, devices and substances intended for preventing, destroying, or repelling other forms of plant or animal life which the Secretary of Agriculture "shall declare to be a pest."

2. A requirement that all products covered by the Act (except devices) must be registered with the Secretary of Agriculture prior to their sale or introduction into interstate commerce.

3. A requirement that necessary directions for the use of the products be given on the labeling, and also a warning or caution statement, if deemed necessary by the Secretary, to prevent injury to man or other vertebrate and useful invertebrate animals, and vegetation (except weeds).

4. A provision requiring poison labeling, including the skull and crossbones and an antidote statement, on products which contain any substance or substances in quantities "highly toxic to man."

5. A provision that certain white powdered poisonous economic poisons must be "distinctly colored or discolcolored" where "feasible" and necessary for the protection of the public health.

6. A requirement that there be a statement on the label of the net weight or measure of the contents of the package.

7. Authority for the inspection of books and records relating to the delivery or holding of any economic poison or device by authorized Federal and State employees.

Other differences include a change in the ingredient statement requirements; prohibition of any reference to registration on the label, and provision for increased penalties in case of violation of the Act.

Provisions of the Act*

EC. 2. *Definitions:*

(a). The term "economic poison" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, fungi, weeds, and any other form of plant or animal life or viruses, except viruses on or in living man or other animals, which the Secretary ** shall declare to be a pest.

Note that this is much broader than the Act of 1910 in that it includes rodent poisons, weed killers, and products for use against any other form of plant or animal life that the Secretary may declare to be a pest. [Sec. 6a. and a(1)]

(b). *Device.* The term "device" means any instrument or contrivance intended for trapping, destroying, repelling, or mitigating insects or rodents or destroying, repelling, or mitigating fungi or such other pests as may be designated by the Secretary, but not including equipment used for the application of economic poisons when sold separately therefrom.

Sprayers or dusting machinery would not be included under this definition, nor would the penalty provisions of the Act apply to the usual type of wire cage traps and "snap" traps for mice and rats, or to ordinary steel spring animal traps, and similar mechanical devices that do not have any labeling claims or accompanying literature.

(c) and (d) define *"insecticide"* and *"fungicide"*. These are the same as in the Act of 1910 except that fungicides (which include disinfectants and bactericides) intended for use on or in living man or other animals, are exempt from the provisions of the Act.

(e). *Rodenticide.* The term "rodenticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating rodents or any other vertebrate animal which the Secretary shall declare to be a pest. This includes not only preparations for the control of animals ordinarily known as rodents, but also preparations for use against any other vertebrate animal that the Secretary shall declare to be a pest. [See Sec. 6, a. and a, (1).] This could include hawks, crows, coyotes, skunks or other predatory animals.

(f). *Herbicide.* Means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any weed.

(g). *Weed.* Any plant which grows "where not wanted". The provision for the inclusion of herbicides under the Act did not appear in the original draft of the Bill, but was added after the necessity for regulatory control over the many weed-killing remedies was brought to the attention of the Committee of the House when the bill was before it for consideration.

(h) and (i). Define "insect", and "fungi". The only difference from the Act of 1910 and the regulations under it, is that the term "fungi" as used in the Act does not include fungi or bacteria "on or in living man or other animals."

(j). *Ingredient statement.* The Act requires (1), a statement of the name and percentage of each active ingredient, together with the total percentage of the inert ingredients, in the economic poison; or (2) a statement of the name of each active ingredient, together with the name of each and total percentage of the inert ingredients, if any (except option 1 shall apply if the preparation is "highly toxic to man", determined as provided in section 6); and, in addition to (1) or (2) in case the poison contains arsenic in any form, a statement of the percentages of total and water soluble arsenic, each calculated as elemental arsenic.

The first is the same as the Act of 1910. Note, however, that (2) requires the naming of each and every active ingredient (but not giving the percentage of each), as well as giving the name of each and every inert ingredient present, if any, and the total percentage thereof. In the case of a product that consists entirely of active ingredients, each and every one of such ingredients must be named, but the percentage of each need not be declared. (The statement "Active ingredients 100%" may be added.)

Note also that form (1) must be used if the product is "highly toxic to man". [See Sec. 6a.(2), "Enforcement".] The requirement for declaring total and water soluble arsenic is the same as in the old law.

(k). *Active Ingredient,* and *Inert Ingredient.* These terms are defined more definitely than in the Act of 1910. The law states that for an ingredient to be considered "active", it must be one which will prevent, destroy, repel, or mitigate insects, fungi, rodents, weeds, or other pests included under the provisions of the Act. Activators, synergists, baits, lures and like ingredients must, to be considered "active ingredients", comply with these conditions.

With the more complex chemicals that are now being used in economic poisons, and which may be known under different names, or frequently only by initials or numbers, it is sometimes difficult to determine what names should be applied to them. The Secretary is authorized to make regulations for the determination and establishment of suitable names to be used in the ingredient statement. (Sec. 6.a.)

The ingredient statement must appear on that part of the immediate container or wrapper of the retail package which is presented or displayed under customary conditions of purchase, and also on the outside wrapper or carton, if there be one, in case the ingredient statement on the immediate container cannot be clearly read: *Provided,* if the size or form of the container makes it impractical to place it on the part of the retail package which is displayed under customary conditions of purchase, the Secretary may permit the ingredient statement to appear "prominently" on some other part of the container. [Sec. 2u(2)(e).]

(r). *Label.* The term "label" means the written, printed, or graphic matter on, or attached to, the economic poison or device or on the immediate container thereof, and the

* Any statements made herein that indicate interpretations of the provisions of the Act are based on information furnished and statements made to the Agricultural Committee of the House of Representatives when the Bill was before it, by officials of the Department of Agriculture, and others, who appeared before the Committee, and which were accepted by the Committee as indicating the intent of Congress with respect to the meaning of these provisions of the Act.

** The term "Secretary" where used in the Act means the Secretary of Agriculture.

outside container or wrapper of the retail package, if any there be.

(s). *Labeling*. This includes all labels and other written, printed, or graphic matter—(1) upon the economic poison or device or any of its containers or wrappers; (2) accompanying the economic poison or device at any time; (3) to which reference is made on the label or in literature accompanying the economic poison or device, except reference to certain Government and State publications, or publications issued by other Federal or State institutions authorized by law to conduct research in the field of economic poisons.

This definition of "labeling" would include circulars or other printed matter furnished to a dealer by mail, in person, or otherwise and supplied to the buyer in connection with the purchase. It would also include the shipping package. Newspaper advertising, however, would not be included.

Registration

SEC. 4. a. Every economic poison which is distributed, sold, or offered for sale in any Territory or the District of Columbia, or which is shipped or delivered for shipment from any State, Territory, or the District of Columbia to any other State, Territory, or the District of Columbia, or which is received from any foreign country shall be registered with the Secretary: PROVIDED, That products which have the same formula, are manufactured by the same person, the labeling of which contains the same claims, and the labels of which bear a designation identifying the product as the same economic poison may be registered as a single economic poison; and additional names and labels shall be added by supplemental statements; the registrant shall file with the Secretary a statement including—(1) the name and address of the registrant and the name and address of the person whose name will appear on the label; (2) the name of the economic poison; (3) a complete copy of the labeling accompanying the economic poison and a statement of all claims to be made for it, including the directions for use. (*Devices* are exempt from registration.)

The Secretary may also, "when he deems it necessary", require a full description of the research results on which the claims are based, and the submission of the complete formula of the economic poison.

It would appear that a complete formula disclosure would be necessary in the great majority of cases, since, without knowing the composition of the product, it would be impossible for the administrating officials to determine whether or not the labeling submitted, including the ingredient statement, were in compliance with the provisions of the Act.

The Act provides that if, in the opinion of the Secretary, the claims made for the product are justified and the labeling complies with the law's requirements, he shall register it. On the other hand, if the claims are not considered warranted, or the label does not comply with the Act, the registrant will be notified and given an opportunity to make the necessary corrections. If he insists that corrections are not necessary, and requests "in writing" that the product be registered, the Secretary shall register it "under protest", and issue a "warning" to the registrant of the apparent failure of the article to comply with the provisions of the Act.

The Secretary also is authorized to cancel the registration of any product previously registered and issue a "registration under protest", should he deem such action warranted.

In any event, registration is not to be considered as relieving the manufacturer from responsibility, or giving him immunity from penalty under the law should examination show that his product failed to do what was claimed for it.

Registration is not required in the case of products shipped from one plant to another plant operated by the same person and used "solely at such plant as a constituent part to make an economic poison which is registered under this Act."

There is no fee for registration and it may be renewed, upon application, at the end of five years,—otherwise it may be cancelled.

The industry was not in entire accord with the registration provisions in the bill. It was held, however, that registration will make the adiministration of the Act much simpler; will greatly increase the protection to the users of products covered by the Act, and that manufacturers will be benefitted by having their formulas and labels passed upon by experts of the Department of Agriculture before placing their products on the market and thus assist them in complying with the law's provisions. Administrative officials have stated that "registration need not be burdensome to the manufacturer because every effort will be made to keep it as simple as possible."

Coloring

SEC. 3.(a)(4). Provides for the coloring or discoloring, in accordance with regulations promulgated by the Secretary, of certain dangerous white powder economic poisons to prevent their being mistaken for flour, sugar, salt or other products used in the preparation of foods. These include the arsenates of lead, calcium, magnesium and zinc, arsenite of zinc, sodium fluoride, sodium fluosilicate and barium fluosilicate. Also any other white powder economic poison which the Secretary, after investigation and public hearing on the necessity of such action "for the protection of the public health and the feasibility of such coloration", shall, by regulation, require that it be distinctly colored or discolored. The Secretary is authorized to exempt from coloring any poison intended for a particular use or uses if he determines that it is unnecessary for the protection of the public health. Also, if it is determined that coloration is commercially impractical, it will not be required.

Adulteration & Misbranding

SEC. 2.t. *Adulterated*. This term is defined essentially the same as under the Act of 1910, except that injury to vegetation resulting through the use of an insecticide or fungicide, is classed as "misbranded". [Sec. 2.u. (2)(g).]

(u). *Misbranded*. The misbranding provisions have been materially broadened in the present law. In addition to those in the old law, they provide that an economic poison

The Andresen Act is broader in scope than the old law and, although a compromise, it should offer effective, valuable protection

or device is misbranded if its labeling bears any reference to registration under the Act, (The use of registration "Code Numbers" may be authorized); if the labeling accompanying it does not contain necessary directions for use; if the label does not bear a warning or caution statement adequate to prevent injury to man or other vertebrate animals and "useful" invertebrate animals, and vegetation (except weeds); if the label does not bear an ingredient statement as prescribed (see under "Ingredient statement"); if any statement or other information required on the label or labeling is not "prominently placed thereon with such conspicuousness (as compared with other words, statements, designs, or graphic matter in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use"; and if in the case of insecticides, fungicides or herbicides when used as directed "or in accordance with commonly recognized practice" it shall be injurious to living man or other vertebrate animals, or vegetation, except weeds, to which it is applied, or to the person applying it.

Prohibited Acts

SEC. 3.(a) provides that it shall be unlawful for any person to distribute, sell, or offer for sale any economic poison which (1) has not been registered, or if its composition or any claims made for it or any of the directions for use differ "in substance" from the representations made in connection with its registration; (2) unless it is in the manufacturer's or registrant's unbroken container with a label affixed bearing (a) the name and address of the manufacturer, registrant, or person for whom manufactured; (b) the name, brand, or trade-mark of the article; and (c) the net weight or measure of the content: *Provided*, that the Secretary may permit "reasonable variations." (Small packages are not exempt from the net weight or measure provision.)

The provision authorizing "reasonable variations" in the weight or measure declaration is similar to that in numerous State and other Federal regulatory laws. What constitutes "reasonable variations", while it involves a number of varying factors, is, to a considerable extent, a matter of opinion. It has been the subject of much controversy and the courts have not been unanimous in their opinions. It has been generally held, however, that this is intended to cover variations due to uncontrollable causes and not to carelessness or slipshod methods of weighing or packing.

3.(a)(3). It shall be unlawful to ship any economic poison that is "highly toxic to man" unless the label bears (a) the skull and crossbones; (b) the word "Poison" prominently "IN RED" on a background of distinctly contrasting color; and (c) an antidote statement. (The term "antidote" means a practical immediate treatment in case of poisoning and includes first-aid treatment. Sec. 2.m.)

(4). To ship any white powder economic poison that is not colored or discolored as provided by this paragraph.

(5). To ship any economic poison that is adulterated or misbranded or any device which is misbranded. No article shall be deemed in violation of this Act if intended solely for export and it is prepared and packed according to the specifications of the foreign purchaser.

(5)c. Provides that it shall be unlawful (1) for any person to detach, alter, deface, or destroy, in whole or in part, any label or labeling, or to add to, or take away any substance from, an economic poison in a manner that may defeat the purpose of the Act; (2) for any manufacturer, distributor, dealer, carrier, or other person to refuse, "upon a request in writing", to furnish or permit any person "designated by the Secretary to have access to and to copy such records as authorized by Sec. 5 of this Act."—(includes all records showing the delivery, movement, or holding of such economic poisons or devices); and (3) for any person to give a guaranty provided for in section 7 which is false in any particular.

This section also provides that it is unlawful for any person to use "for his own advantage" or to reveal, other than to the Secretary (or other officials specified), any information relative to formulas acquired by authority of section 4. (Registration).

Enforcement

SEC. 6,a. This section authorizes the Secretary to make rules and regulations for carrying out the provisions of the Act. It is not required that public hearings be held before issuing such regulations but administering officials have announced that hearings will be held on the new regulations before they are promulgated. Section 13 provides, however, for cooperation with other departments of the government and with "the official agricultural or other regulatory agency of any State, or any State, Territory, district, possession, or any political subdivision thereof, in carrying out the provisions of this Act, and in securing uniformity of regulations."

The latter provision is an advanced step, and should, to a large extent, relieve industry from the burdensome operation through the maze of regulations now existing and in operation by the various regulatory agencies.

The Secretary is also authorized under section 6, after public hearing, (1) "to declare a pest any form of animal or plant life or virus which is injurious to plants, man, domestic animals, articles, or substances"; (2) "to determine economic poisons, and quantities of substances contained in economic poisons, which are highly toxic to man"; and (3) to determine standards of coloring, as provided under section 3(a)(4).

(*Turn to Page 152A*)

SYMBOL OF HIGH QUALITY CHEMICALS FOR MODERN INSECTICIDES AND DISINFECTANTS

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THANITE* . . . a 100% active toxicant for household, livestock, or industrial use. Sprays containing as little as 3% Thanite give rapid knockdown, high kill, and long-lasting repellency.

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A New Medium for Study of

Quaternary Bactericides

By
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THE introduction of quaternary ammonium compounds and other cationics into the field of sanitation, as in disinfection of eating and food handling utensils, has brought need for a suitable and practical method or medium that will show a true bactericidal rather than a bacteriostatic end point. This need is amplified by existing conflicting viewpoints on the bactericidal efficiency of these compounds. It is well known that the standard FDA[1] test is inadequate for measuring the efficiency of certain disinfectants because of the difficulty of distinguishing between bacteriostatic and bactericidal effects. Numerous attempts have been made to secure a more suitable testing method or medium, all of which have contributed toward a closer bactericidal measurement of these materials. Suggested procedures for elimination of bacteriostasis consist of either some form of dilution[2] or the Shippen[3] modification of the FDA technique, neutralization by negative fatty acid ions or phospholipids[4] or a combination of serum and dilution.[5] These modifications have been more or less successful but also have carried other practical difficulties. Dilution methods require large volumes of broth, making them both expensive and cumbersome. In addition, viable organisms are diluted with the quaternary making the endpoint indefinite. Neither is it possible to use small numbers of organisms by this procedure. The use of negative fatty acid ions, while effective as neutralizers, requires large quantities which call for additional dilution methods. If used in high enough concentrations, they are in themselves bacteriostatic. Quisno opened a field of possibilities with the suggestion of a medium consisting of "Tween 80" (a polyoxyalkylene sorbitan monooleate) and lecithin (a phospholipine) added to ordinary FDA broth. This is probably the nearest approach that has been made to solving the multiple difficulties involved in eliminating bacteriostasis. It has the objection that large amounts of quaternaries cause haziness of media, hence require dilution for certain testing methods.

The other most acceptable method is the Shippen modification of the FDA technique, but contains the disadvantages of dilution and preclusion of testing with small numbers of organisms.

In this laboratory, the authors in similar search for a suitable medium for studying the bactericidal properties of cationics, with elimination of bacteriostasis, have devised a medium which seems to be suitable for this type of study and applicable to the various testing methods.

Medium

THE medium consists of a thioglycollate basal medium, asolectin (purified phosphatide), "Tween 20" (polyoxyalkylene sorbitan monolaurate) and agar. The thioglycollate fluid medium offers more growth factors than FDA broth, allows the growth of more fastidious organisms, gives consistent results, and potentially offers a common subculture medium for testing other disinfectants.

The asolectin has the advantage over other phospholipids in being obtainable in the granular form, allowing for easer handling and more rapid dispersion than pastes. In addition, it appears to have superior capacity in neutralization of quaternary ammonium compounds over the paste compounds tested. It also remains in dispersed form in the presence of high concentrations of quaternaries.

The Tween 20, acts primarily as a non-bacteriostatic dispersing agent for the asolectin, but also exhibits an appreciable neutralizing action in itself. Studies have shown that in a 6 per cent solution it causes no bacteriostasis against *E. typhosa* or *Staphylococcus aureus* and only slight bacteriostasis in a 10% solution in the basal medium.

The T.A.T. medium appears largely to prevent bacteriostasis in the presence of either minimal or maximal numbers of bacteria and where a high quaternary-organism ratio is existent.

TABLE
Effect Of Different Media And Methods On Evaluation Of Bacteriostatic Properties Of Quaternary Ammonium Compounds

Eberthella typhosa-(Hopkins)

Final Dilution of Disinfectant in Broth	*FDA minimum*	*FDA loop*	*FDA Shippen from loop inoc.*	*TAT minimum*	*TAT loop*
BENZYL ALKONIUM CHLORIDE:					
1-1000	– – – – –	– – – – –	– – – – –	– – – – –	P P P P P
1-2000	– – – – –	– – – – –	– – – – –	P P + P P	+ + P + +
1-3000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-5000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-10,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-25,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-50,000	– – – – –	– – – – –	– – + + +	+ + + + +	+ + + + +
1-75,000	– – – – –	– – + + +	+ + + + +	+ + + + +	+ + + + +
1-100,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-150,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-200,000	+ + – + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-300,000	± + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
Control	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
ALKYL DIMETHYL DICHLORO BENZYL AMMONIUM CHLORIDE:					
1-1000				P P + P P	P P P P P
1-2000				+ + + + +	+ + + + +
1-3000				+ + + + +	+ + + + +
1-5000				+ + + + +	+ + + + +
1-10,000				+ + + + +	+ + + + +
1-25,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-50,000	– – – – –	– – – – –	– – – + +	+ + + + +	+ + + + +
1-75,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-100,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-150,000	– – – – –	– – + + +	+ + + + +	+ + + + +	+ + + + +
1-200,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-300,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
Control	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
OLEYL DIMETHYL ETHYL AMMONIUM BROMIDE:					
1-1000				+ + + + P	+ + + + +
1-2000				+ + + + +	+ + + + +
1-3000				+ + + + +	+ + + + +
1-5000				+ + + + +	+ + + + +
1-10,000				+ + + + +	+ + + + +
1-25,000	– – – – –	– – – – –	– + + + +	+ + + + +	+ + + + +
1-50,000	– – – – –	– – – – +	+ + + + +	+ + + + +	+ + + + +
1-75,000	– – – – –	– + + + +	+ + + + +	+ + + + +	+ + + + +
1-100,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-150,000	– – – + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-200,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-300,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
Control	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
CETYL PYRIDINIUM CHLORIDE:					
1-1000				– – P P P	+ + + + +
1-2000				P P + + +	+ + + + +
1-3000				+ + + + +	+ + + + +
1-5000				+ + + + +	+ + + + +
1-10,000				+ + + + +	+ + + + +
1-25,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-50,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-75,000	– – – – –	– – – – –	– – + + +	+ + + + +	+ + + + +
1-100,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-150,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-200,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-300,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-500,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
Control	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +

P = partial growth
All results based on 48 hours incubation at 37° C.

Staphylococcus aureus (209)

Final Dilution of Disinfectant in Broth	*FDA minimum*	*FDA loop*	*FDA Shippen*	*TAT minimum*	*TAT loop*
1-5000				– P – – –	– – P P –
1-10,000				– P P P P	+ + + + P
1-15,000				+ + + + +	+ + + + +
1-20,000				+ + + + +	+ + + + +
1-30,000				+ + + + +	+ + + + +
1-50,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-100,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-200,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-400,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-600,000	– – – – –	– – + + +	+ + + + +	+ + + + +	+ + + + +
1-800,000	– – – – –	– – – + +	+ + + + +	+ + + + +	+ + + + +
1-1,000,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-2,000,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-3,000,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-5,000,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
Control	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-5000				– – – – –	– – – – P
1-10,000				– – – – P	+ P P P P
1-15,000				+ P – P +	+ + P + +
1-20,000				+ + + + +	+ + + + +
1-30,000				+ + + + +	+ + + + +
1-50,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-100,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-200,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-400,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-600,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-800,000	– – – – –	– + + + +	+ + + + +	+ + + + +	+ + + + +
1-1,000,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-2,000,000	– – – – +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-3,000,000	– – – + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-5,000,000	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
Control	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-5000				– – – – –	– – – – –
1-10,000				– – – – –	– – – – –
1-15,000				– – – – –	– – – – –
1-20,000				– – – – P	– – – – –
1-30,000	– – – – –	– – – – –	– – – – –	+ P P P P	– P P P P
1-50,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-100,000	– – – – –	– – – – –	– – – – –	+ + + + +	+ + + + +
1-200,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-400,000	– – – – –	– – – – –	+ + + + +	+ + + + +	+ + + + +
1-600,000	– – – – –	– – – + +	+ + + + +	+ + + + +	+ + + + +
1-800,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-1,000,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-2,000,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-3,000,000	– – – – –	+ + + + +	+ + + + +	+ + + + +	+ + + + +
1-5,000,000	– + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +
Control	+ + + + +	+ + + + +	+ + + + +	+ + + + +	+ + + + +

The agar is added to aid in clarification and to allow the growth of discreet colonies. The partial kill can thus be measured with this medium while in ordinary broths growth occurs diffusely throughout the medium.

The composition of the Tween-Asolectin-Thioglycollate (TAT) medium is as follows:

Thioglycollate Fluid Medium (Difco)	29.5 gm.
Tween 20*	30.0 ml.
Asolectin†	2.0 gm.
Agar	0.50 gm.
Distilled H_2O	1000 ml.

pH 7.0 ± 0.1

The medium is prepared by adding all the ingredients to a large flask and heating on a steam bath. Occasional stirring will aid in the complete dispersion of asolectin. This is followed by tubing and autoclaving in the usual manner. After sterilization there is a tendency for part of the Tween to settle to the bottom of the tubes, but this is readily resuspended by shaking while the medium is warm. The pH will be 7.0 if the Thioglycollate base is used. In checking the pH it is necessary to use an electrometric rather than colorimetric method because of interference by the Tween.

Results of Use of Medium

THE effectiveness of the use of the media in eliminating bacteriostasis for quaternary ammonium compounds is shown in the Table. These data show tests which have been made comparing FDA technique, Shippen modification of the FDA, and Tween-Asolectin - Thioglycollate (TAT) broths on four quaternaries of different structural properties. To show the influence of numbers of organisms, or quaternary-organism ratio, the series of tests also includes comparison between minimum and maximum (loop) inoculations.

The tests were conducted by preparing a series of dilutions of the cationic in sterile distilled water under aseptic conditions. These dilutions were 10 times more concentrated than the final dilution in broths, where one ml. of disinfectant was added to 9 ml. of testing medium to give the required final testing dilution of cationic. (e.g., 1 ml. of an original 1-100 dilution of the disinfectant when added to 9 ml. of broth equalled a 1-1000 final cationic dilution). This broth-quaternary mixture was well shaken and then seeded with a 24 hour culture of test organism grown in FDA broth according to U. S. Department of Agriculture Bulletin 198. Test organisms were *Eberthella typhosa* (Hopkins) and *Staphylococcus aureas* (209).

Where maximum numbers of organisms as represented in the loop inoculations were used, one series of each FDA and TAT broth were seeded with a standard 4 millimeter loop of 24 hour test culture. A Shippen modification of FDA technique was then made on the FDA series after 30 minutes from the time of seeding the initial tubes, by subculturing into 10 c.c. of the FDA broth. Comparison of these results gave the extent of neutralization or dissipation of the bacteriostasis by the TAT medium, in relation to FDA medium and the Shippen modification.

The study of the bacteriostatic effect of the disinfectant on minimum numbers of organisms was carried out on a second series of FDA and TAT broth tubes seeded with 0.02 ml., (about 25-50 organisms) made from a saline dilution of the same broth culture used for the loop inoculation of maximum numbers.

To obtain statistical evaluation, five separate series were made on each compound with each method. After seeding, the tubes were incubated for 48 hours at 37° C.

Effect of Media

THE difference in results between the two media and Shippen modification are plainly evident from an inspection of the table on the facing page, by noting the extent of growth in the presence of various concentrations of the disinfectant.

For example, with the use of benzylalkonium chloride and minimal numbers of *E. Typhosa*. FDA results showed no growth in a dilution of 1-150,000. The TAT media gave good growth in a 1-3000 dilution of the disinfectant with the same number of organisms from the same culture. With the use of maximal numbers negative results were secured at a dilution of 1-50,000 with the FDA broth, 1-25,000 with the Shippen modification while complete growth occurred in a 1-2000 dilution with the TAT medium.

With minimal numbers of *Staphylococcus aureus*, no growth occurred in a 1-1,000,000 dilution of the chemical with the FDA broth as compared with growth at 1-15,000 with the TAT medium. With maximum numbers the results were negative in 1-400,000 dilution with FDA, 1-50,000 by the Shippen modification, and positive in 1-10,000 with TAT.

This same pattern is expressed in all of the other quaternaries tested, differing only in the degree of bacteriostasis demonstrated.

It thus seems evident that bacteriostasis is an extremely important factor in the evaluation of this type of disinfectant and that neither FDA nor the dilution obtained with the Shippen modification is adequate to eliminate it. Moreover, with the use of minimum numbers, where a high quaternary-organism ratio exists, bacteriostasis occurs in extremely high dilutions of the disinfectant, quite beyond the range of practical dilution by any method. The TAT medium appears largely to eliminate bacteriostasis in the presence of either minimal or maximal numbers of bacteria. Also large inocula can be used directly from the test mixtures to small amounts of the medium if so desired, as in the speed tests.[6] The TAT medium appears to offer the added advantage of a one tube subculturing technique for testing the effect of highly bacteriostatic compounds.

Summary

QUATERNARY ammonium compounds have become increasingly prominent in the sanitation of utensils used in handling of food. In an effort to obtain better methods for evaluation of the bactericidal potency of these compounds, a new medium has been developed to counteract the bacterio-

(*Turn to Page* 143)

* Tween 20—Atlas Powder Company, Wilmington, Delaware.

† Asolectin — Associated Concentrates, Inc., Atlanta, Georgia.

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DDT RESIDUES

Their Toxicity to Houseflies on Various Surfaces and Materials

By H. A. U. Monro,* A. A. Beaulieu and R. Delisle

Department of Agriculture
Dominion of Canada

RECENT developments in the widespread use of insecticides applied to the interior surfaces of buildings, in order to control continuous invasions of such insects as the housefly and various species of mosquitoes, have necessitated the development of techniques for testing these agents under scientifically controlled conditions which would provide a fairly accurate guide to the results encountered with ordinary methods of application.

In 1945, a project was instituted at the Montreal Laboratory, Plant Protection Division, with the object of developing a method for the continuous assay of different chemicals on certain types of surfaces liable to be encountered by the general public in the application of residual sprays. This undertaking was envisaged as a long term project to include tests of as wide a variety of surfaces and chemicals as could be accommodated as the work progressed. As some of the results recorded during the last two years are of general interest, and possible value, to those engaged in the development of this type of insect control, it would seem desirable to publish them from time to time, and, on this occasion, to include an account of the technique employed. It must be emphasized, however, that this project is still incomplete, in that very few of the tests undertaken have been concluded and, therefore, this paper must be interpreted in the light of a "pregress report."

* Messrs. Monro and Delisle are connected with the Plant Protection Division, and Mr. Beaulieu with the Division of Entomology, Science Service, Dominion Department of Agriculture. This paper, presented June 9 before Natl. Assn. Ins. & Disf. Mfrs., Chicago, is Contribution No. 2492, Division of Entomology, Contribution No. 63, Division of Plant Protection.

MATERIALS

Test Insects

THE test insect employed is the adult housefly, *Musca domestica* L., exposed to the insecticide 4 to 5 days after emergence from the pupa, and retained throughout the procedure at 72 degrees F. and 50 to 55 per cent relative humidity.

Insecticide

The work described in the present report was all done with a kerosene solution containing Technical Grade of DDT, 1-trichloro-2, 2-bis (p-chlorophenyl) ethane, found by chemical assay to contain, in two analyses, 76.0 and 77.4 per cent of the p,p' isomer, respectively.

In order to produce on the surfaces the deposits described below, a standard solution of DDT was produced by dissolving 12 gm. in 84.8 ml. of deodorized kerosene and 24 ml. of xylene. This saturated solution of 12 per cent DDT by weight was sprayed to obtain the high DDT deposits and diluted with deodorized kerosene to produce concentrations of 8 and 4 per cent DDT by weight.

TECHNIQUE

Spraying Apparatus

DESCRIPTION: In order to apply the sprays evenly over the surfaces and produce satisfactory replications of deposit when required, a considerable study was given to the development of the spraying apparatus. A deVilbiss number 12 throat type atomizer was modified by replacing this nozzle by another containing four discharge holes with apertures of .026 in. A small cylindrical brass reservoir with a tap at the bottom replaced the original bottle and was placed above the discharge tube to allow the spray solution to be partly drained off by gravity. This atomizer has been found to work satisfactorily with DDT solutions.

Air pressure for discharging the spray was provided by a small compressor blowing into a 15-gallon regulating tank fitted with a pressure gauge, which discharged the DDT solution in the form of a spray with a satisfactorily even pressure of 5 lb. per sq. in.

Experiments showed that with this apparatus a distance of 23 in. between the nozzle and the spray surface was found to give even replications of spray deposit (see page 125). Accord-

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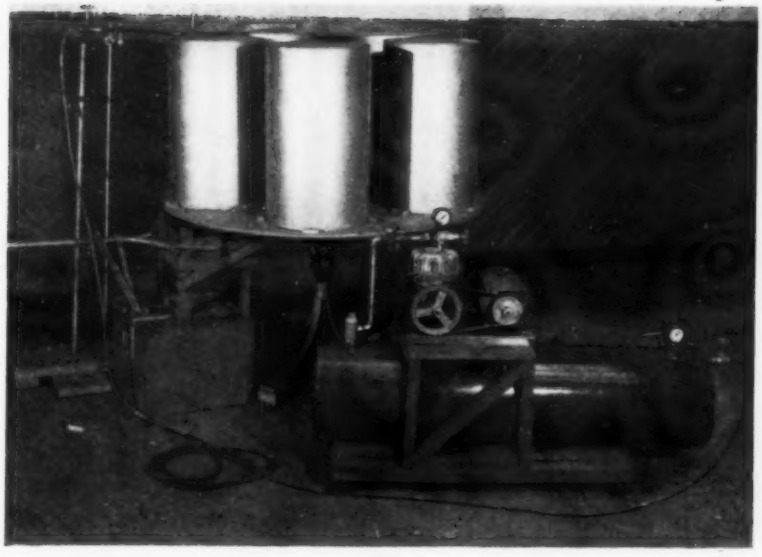


FIGURE 1

ingly, five galvanized iron cylindrical spray towers were constructed 23 in. tall and 13.5 in. in diameter, open at the bottom and closed at one end, with a small hole for the admission of the atomizer nozzle. The area exposed at the bottom of each tower was thus almost exactly 1 sq. ft. (143.14 sq. in.). The towers were arranged at equal intervals above the surfaces to be sprayed and placed on a plywood turn-table (Fig. 1). The towers were grounded to prevent possible eddying due to static electricity.

Efficiency: To determine the efficiency of the spraying technique, tests were made to analyze the replication of deposit from one spraying to another and the distribution of deposit within each tower. For replication, the deposit was quantitatively determined by a chemical analysis based on the method of Gunther (1945). This analysis is based on the dehydrohalogenation of DDT by an excess of alcoholic potassium hydroxide. Since one, and only one, chloride ion is liberated from each molecule of DDT, the remainder of the method involves determining the quantity of free chloride ion in the products of hydrolysis. This is accomplished by precipitating the chloride ion with excess silver ion and then determining the excess of the latter by means of a Volhard titration with ferric ammonium alum as the indicator.

A set of 36 microscopic slides were sprayed with 2.5 ml. of the standard spray solution itself or diluted as described above. One half hour after discharge of the spray, the slides were removed, the DDT extracted with benzene and the DDT determined as already described.

It will be noted that as the original concentration in the spray increases, the actual deposit of DDT recovered does not increase proportionately, and larger relative amounts are retained on the sides of the spray drums. Therefore, it was decided to report all the residues produced on the sprayed surfaces in terms of the weight of DDT in mg. per sq. ft. actually deposited.

For distribution, it was found that the chemical analysis was not sufficiently accurate for the small amounts of spray involved in testing different positions at the bottom of the spray towers. The results of a weighing analysis are, therefore, presented to demonstrate the distribution of the deposit.

TABLE I

REPLICATION OF DEPOSIT
Results of Quantitative Analysis of DDT in 6 Different Sprayings at 3 Different Concentrations

Weight of DDT as contained in 2.5 ml. of sprayed solution	85 mg.	170 mg.	255 mg.
Weight of deposit determined in mg. per sq. ft...	77	111	144
	62	95	144
	70	107	149
	70	127	160
	70	104	149
	70	104	147
Mean	70	108	149

Four circles of glass, which would just fit into Petri dishes covered with ground-glass plate lids, were placed one each into their respective dishes and the whole weighed. One glass plate was then placed on the turn-table in the centre, and the other three equally distributed around the circumference, of one of the spray towers. An amount of 0.5 ml. of the 8 per cent solution of DDT in deodorized kerosene was placed in the reservoir of the atomizer and sprayed through. The spray was allowed to settle for one hour, the glass plates were removed, and their under surfaces wiped. The plates were then placed in their respective Petri dishes, the lids put on, and the whole reweighed.

From these figures it would seem that replication and distribution of the deposit at the bottom of the spray tower can be considered as satisfactory.

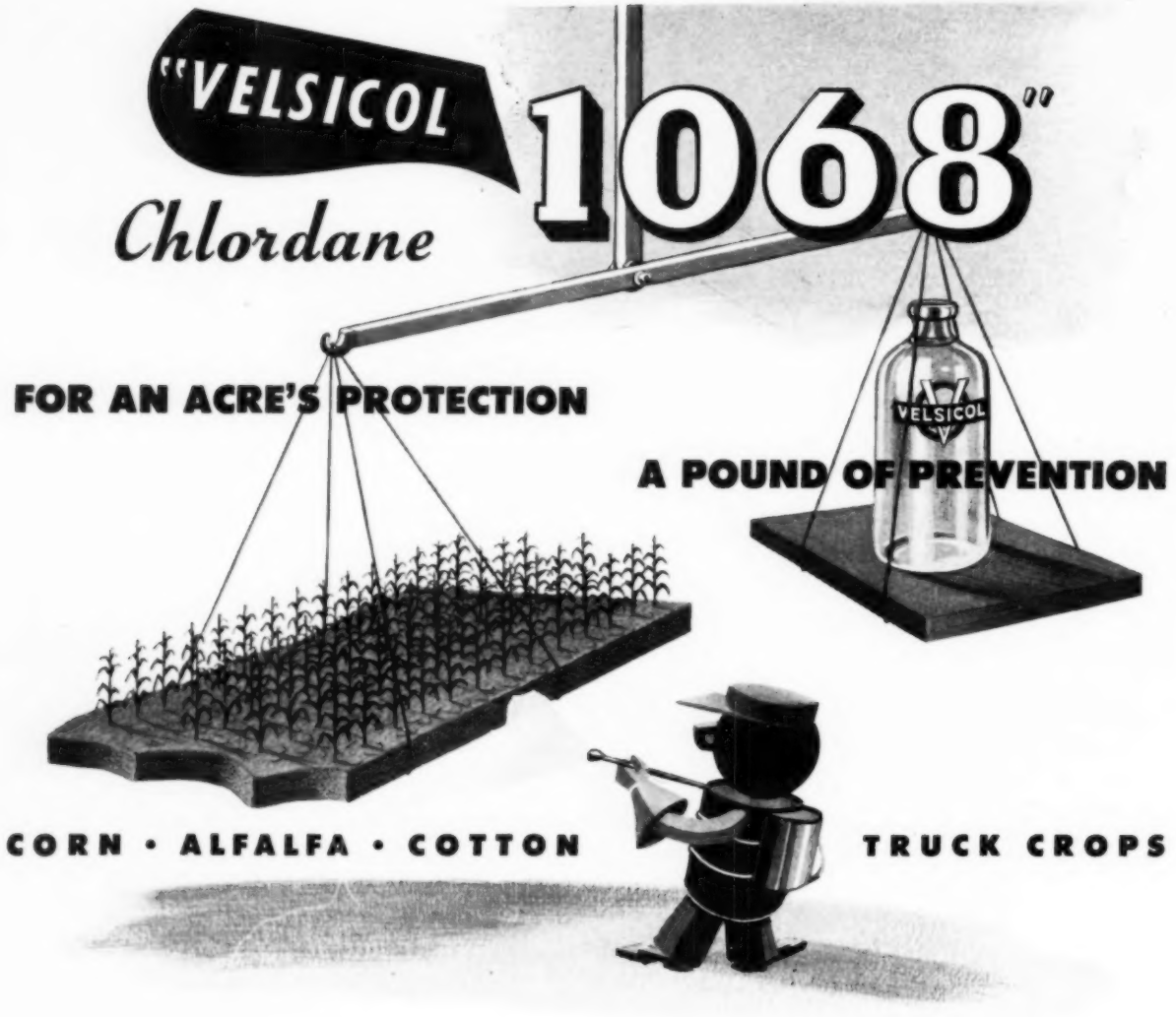
Application: Surfaces to be sprayed are placed on sheets of paper so that the backs will not be contaminated with DDT. Two surfaces are sprayed at one time in each tower, the sheets of paper being changed after each spraying. 2.5 ml. of a standard

TABLE II

DISTRIBUTION OF DEPOSIT

Test No.	*Posit 1 (centre) mg.*	*Posit 2 mg.*	*Posit. 3 mg.*	*Posit. 4 mg.*	*Means mg.*
1	20.7	20.7	20.3	20.1	20.45
2	20.9	21.2	21.2	20.1	20.85
3	20.6	19.7	19.3	19.3	19.73
4	21.4	22.6	20.8	19.8	21.15
5	22.7	23.3	20.7	21.3	22.00
Means	21.26	21.50	20.46	20.12	20.84

Standard error of a single deposit = 0.6
Standard error of mean of 5 deposits at one position = 0.27
Standard error of mean of 5 deposits at one trial = 0.30



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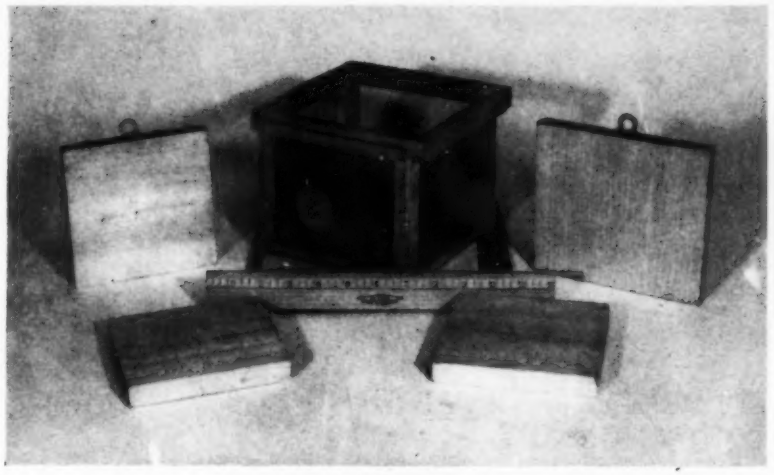


FIGURE 2

solution with a concentrtaion of 85 mg., 170 mg., or 255 mg. of DDT are placed in the reservoir of the atomizer and sprayed through at a pressure of 5 lb. The spray is allowed one half hour to settle, after which the surfaces are removed and placed horizontally on a platform with the treated face upwards. After drying for 24 hours the surfaces are fitted into the cages and tested.

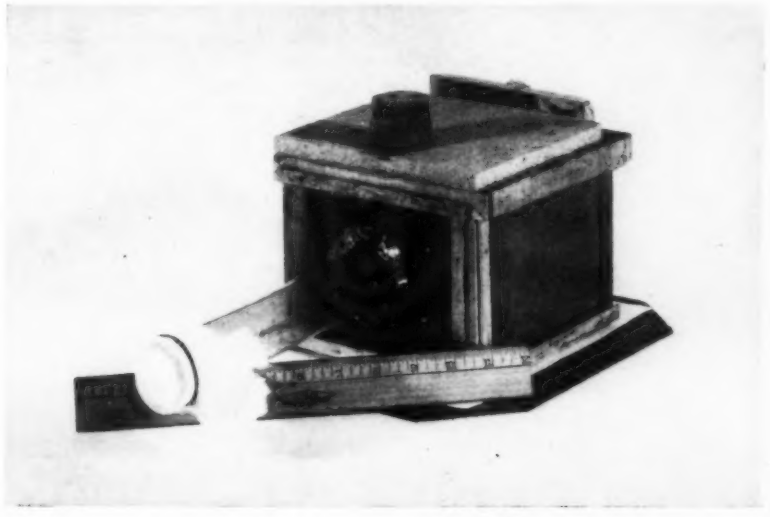
Surfaces

The various types of surface tested in this work are all specially cut out or made to fit into the test cages described below.

Following the first test and between subsequent tests, the surfaces are hung on a specially designed rack in a large laboratory room with skylights in the roof but no windows. During the winter months, the sunlight is entirely indirect, and artificial light is employed during the day, but from April to October, on bright days, the sun plays on the surfaces during the day. The temperature and humidity in the room follow the pattern normally encountered inside houses and heated buildings throughout the year. At night and at weekends during the winter, the temperature may fall as low as 50 to 55 degrees F. It is considered that the general exposure of the sprayed surfaces would approximate a normal indoor environment.

A light deposit of dust has accumulated on the surfaces which have been undergoing test for nearly two years. This deposit has not been interfered with, and it is considered that this would correspond to a normal factor under practical conditions.

FIGURE 3



Test Cages

Construction: At the beginning of this study a considerable amount of time was devoted to experimenting with various types of cages in which to expose the flies to the surfaces. It was soon realized that in order to produce comparable results, as much as possible of the interior of each cage should consist of treated surface. Lindquist (1944) also worked with a cage in which the flies were forced to be in contact with the surface holding the DDT.

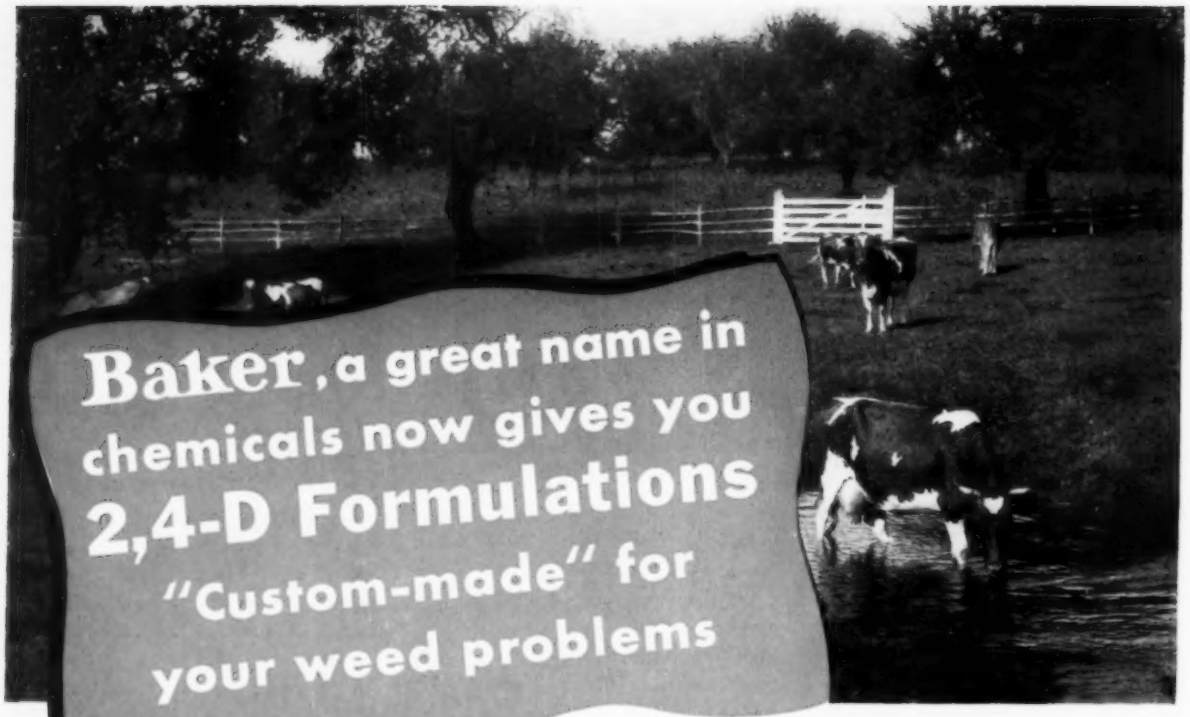
The cage finally adopted (Fig. 2) is rectangular, 5.5 x 6.5 x 6.5 in., with copper wire mesh sides and an open top and bottom. Surfaces to be sprayed are cut so as to fit inside the cage lining on three of the wire mesh sides. The roof of the cage is also made of a treated surface. Thus, during exposure of the flies, the surface to be tested occupies four sides of the cage, the front is the wire screening and the bottom a piece of clean paper placed over masonite. When the surfaces are fitted, the free space in the cage is approximatly 125 cu. in.

Cleaning: These cages are used repeatedly for the tests, and it has been found during monthly checks in empty cages that, if very close attention is not paid to the routine cleaning procedure, DDT accumulated on the wire during routine handling may bring about appreciable mortalities. Recent tests following the use of water suspensions of DDT have emphasized this need most strongly. The routine followed at present consists in a cleaning of the cage unit with xylene, followed by thorough washing with hot water and soap detergent, and a rinsing in boiling water.

Manipulation of the Flies

Rearing of Flies: As no facilities existed in the Montreal Laboratory for the continuous rearing of houseflies, fly pupae were supplied by the Insecticide Testing Laboratory, Plant Products Division, Production Service, Ottawa. Pupae of known age are shipped three times a week by express from Ottawa to Montreal, a distance of 120 miles.

Emergence cages: On arrival at this Laboratory, the fly pupae are laid in shallow dishes in rectangular emer-



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gence cages of 11 x 11 x 14 in. Flies emerging during the first 16 hours of the emergence period are all discarded as being mostly males. Flies emerging between 16 to 40 hours after commencement of emergence are employed in the tests. They are kept in the emergence cage until they are 4 to 5 days old on a diet of powdered milk, with water soaked in absorbent cotton pads for drinking.

Anaesthetization: Counting of the adult flies for test purposes was found to be extremely difficult, so anaesthetization was tried out. After some time a satisfactory technique was evolved by exposing about 300 flies at a time in a special anaesthetization box 7¾ x 8¾ x 11¾ in., fitted with a transparent celuloid cover for observation purposes. The flies are exposed for 3 minutes to 4 ml. of an equal mixture of chloroform and ether poured onto a pad of absorbent cotton inside the box. Tests on sprayed surfaces with anaesthetized and non-anaesthetized flies, at the level of 75 per cent mortality, revealed no significant difference in the mortalities of the two groups.

Revival: The flies are sexed and divided into lots of 120, half males and half females, which are then placed in "recovery cylinders" illustrated in Fig. 3. These are tubes of celluloid 9 in. long and 1½ in. in diameter, pierced with numerous small holes and closed at each end with cheese cloth. The anaesthetized lots are placed in these and left there until they have resumed normal activity, usually a period of one hour being required for all flies to recover completely. The flies are then very easily blown into the cages with a puff of air from the lungs through the special entrance hole, which is then corked. (Fig. 3)

"Technical and Commercial Aspects of 2,4-D" presented by L. W. Kephart, in charge, Weed Investigations, U. S. D. A., Beltsville, Md., at the June meeting of NAIDM, Chicago, will be published in the August issue of "Agricultural Chemicals." Copies of this issue will be sent to readers of "Soap and Sanitary Chemicals" on request.

Exposure: The flies are exposed to the treated surfaces for ten minutes, which period of time enables the operator to complete the introduction of the flies in all five cages making up one set of replicates. The period of ten minutes was at first arbitrarily chosen to fit in with the routine, but subsequent tests with different exposure periods indicate that significant differences in mortality are not obtained between quite widely differing exposure periods, and that a period of ten minutes gives results which are satisfactory for comparing mortalities with different strengths of deposit and with variations in residual effect.

The use of 120 flies to each 125 cu. in. capacity test cage prevents overcrowding, as it allows a free space of just over 1 cu. in. per fly.

Observation: After the exposure period of ten minutes the surfaces are removed and hung up until the next monthly test. The flies are left in the cages with a small amount of powdered milk and water-soaked absorbent cotton, for observations on immediate knockdown and for the mortality counts taken after 24 hours.

EXPERIMENTS

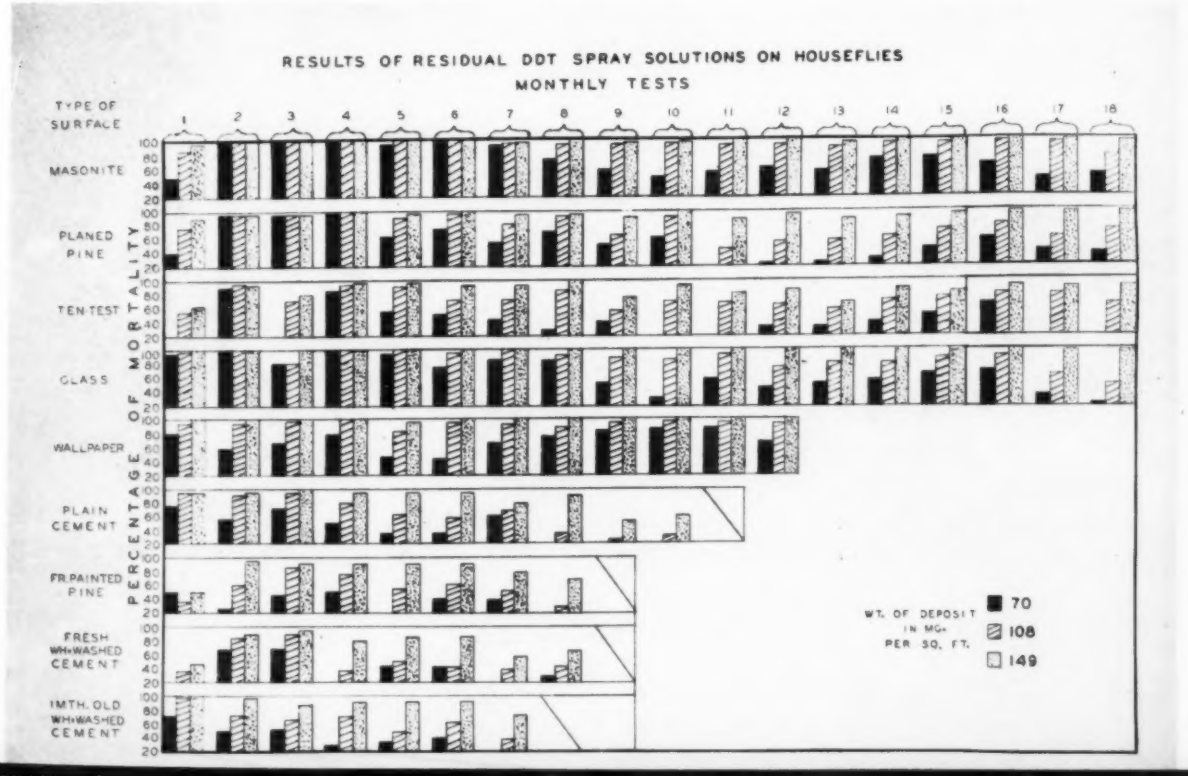
FOLLOWING the initial spraying and test, each set of surfaces is tested approximately once a month. Owing to a few interruptions occasioned by holiday periods and transfer of personnel, the number of tests does not correspond exactly to the total number of months of exposure of the surfaces. For instance, to date (May 20th, 1947) 18 tests have been made with the glass surfaces which were first sprayed Aug. 29th, 1945, 21 months ago. (See Fig. 4.)

RESULTS

UNIFORMITY: The uniformity of mortalities among the replicates in each test are of importance in assessing the results obtained. As an

(*Turn to Page* 143)

FIGURE 4



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The Electron Microscope Studies Bright-drying WAX Dispersions

By
Daniel Schoenholz
and
Cyril S. Kimball*
Foster D. Snell, Inc.

EVEN though largely empirical, laboratory investigations of bright-drying wax dispersions have led to greater knowledge of the principles involved and to improved formulations. Formerly called self-polishing waxes—hardly a true description.— these products are sufficiently complex to present many problems not readily resolvable by simple technics.

For example, it has long been known that the particles in a good bright-drying wax are of colloidal dimensions, that is, within the range of 0.001 to 0.1 microns in diameter. This means that they are too small to be seen under an ordinary microscope, but too large to be in molecular dispersion or true solution. How large then, or rather how small, are they?

The electron microscope was used to answer this question. It seemed probable that once the mean particle size of each of a series of dispersions was accurately established, this could be correlated with degree of gloss, and also with the quantity of emulsifier present. Such information would constitute a distinct advance in our knowledge of the factors which influence the properties of bright-drying waxes. The more we can add to our fundamental knowledge, the better equipped we are to formulate superior products.

Laboratory Results

THREE wax dispersions were prepared, based on a simple formula in which the amount of soap—that is, the dispersing agent—was the only solid ingredient to be varied. The amount of water was also varied in order to keep the content of total solids the same in each preparation, 12 per cent of solids. The formulas were as follows:—

Ingredients	Sample No. 1. *Parts by wt.*	2. *Parts by wt.*	3. *Parts by wt.*
Carnauba wax No. 1 yellow	84.50	84.50	84.50
Ivory soap	12.75	10.75	9.75
Borax	9.50	9.50	9.50
Water	743.25	728.25	721.50

Electron-microscope photographs of these dispersions taken at x 50,000, are shown in Figure I. A micrograph was also taken of a gelled wax dispersion in order to study its appearance in comparison with that of the liquid emulsions; this, taken at x 20,000, is shown in Figure II.

From Figure I it is seen that the size of wax particles increases from sample No. 1 to sample No. 3, corresponding to a decrease in soap content. This confirms previously published opinion[1] that particle size decreases with an increase in the amount of soap present. The more hazy particles in the background are judged to be soap. These are more numerous in sample No. 1, that with the highest soap content, than in the others.

In Figure II, the photomicrograph of a gelled wax dispersion, the wax particles are seen to be agglomerated in large clusters. These clusters probably absorb and withdraw relatively large quantities of water during the gelling process.

Particle size was measured in microns by examination on a screen at x 200,000. The size of particles in the three liquid emulsions and in the gelled emulsion (sample No. 396F22) is plotted against the number of particles as shown in Figure III. Particle sizes proved to be extremely small, much smaller than the wave length of light, for example, which averages 5700 Angstrom units or 0.7 micron, in the visible spectrum. The curves show two distinct peaks. The left hand

* Before Nat. Assn. Insecticide & Disinfectant Mfrs., Chicago, June 10, 1947.

[1] C. S. Glickman, Chem. Industries 54, 60-4, 213-17 (1944).

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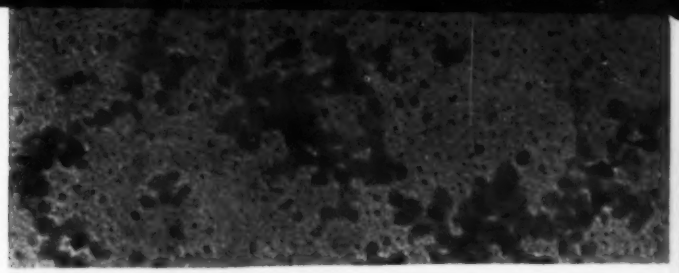
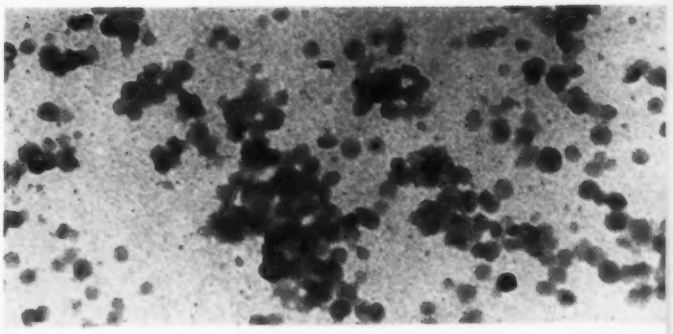
peak is presumed to represent soap particles deposited as the emulsion dried in the vacuum of the electron microscope. These ranged from 0.005 to 0.045 micron in diameter. The right hand peak, assumed to represent wax particles, covers a range of 0.045 to 0.1-0.12 micron. The wider spread of this part of the curves for samples No. 2 and 3, as compared with that of No. 1, suggests that the higher soap content of the former increases the uniformity of particle size, in addition to diminishing the size.

In Figure IV the same data are plotted on arithmetic probability paper. The percentage of particles smaller than any given size can be read from the corresponding point on an individual curve. The mean size for each sample is shown as the point where the curves cut the 50 per cent line. The standard deviation can be read from the graph as the difference between the mean and the point to the right where the short vertical line cuts the curve.

In order to correlate these data with gloss properties, the three samples of emulsions were applied to strips of linoleum and allowed to dry. The gloss of the dried films was then read in terms of reflectance as shown with a Pfaltz and Bauer Glossmeter. The results reported as per cent increase of gloss over that of unwaxed linoleum, are shown in the following table, together with a summary of results from determination of particle size.

The figures show that sample No. 1, having the smallest mean particle size, has the largest soap to wax ratio. The dried film from this sample also shows the highest gloss, as indicated in the column of figures at the extreme right. Correspondingly sample No. 3, having the largest mean particle size, has the lowest soap to wax ratio, and shows the least gloss.





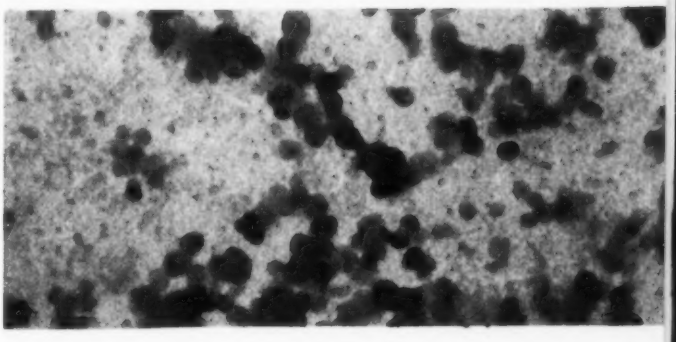


FIGURE 1. Top to bottom — wax emulsions 1, 2 & 3 — Photographs of Bright Drying Wax Dispersions taken with the electron microscope at a magnification of X 50,000

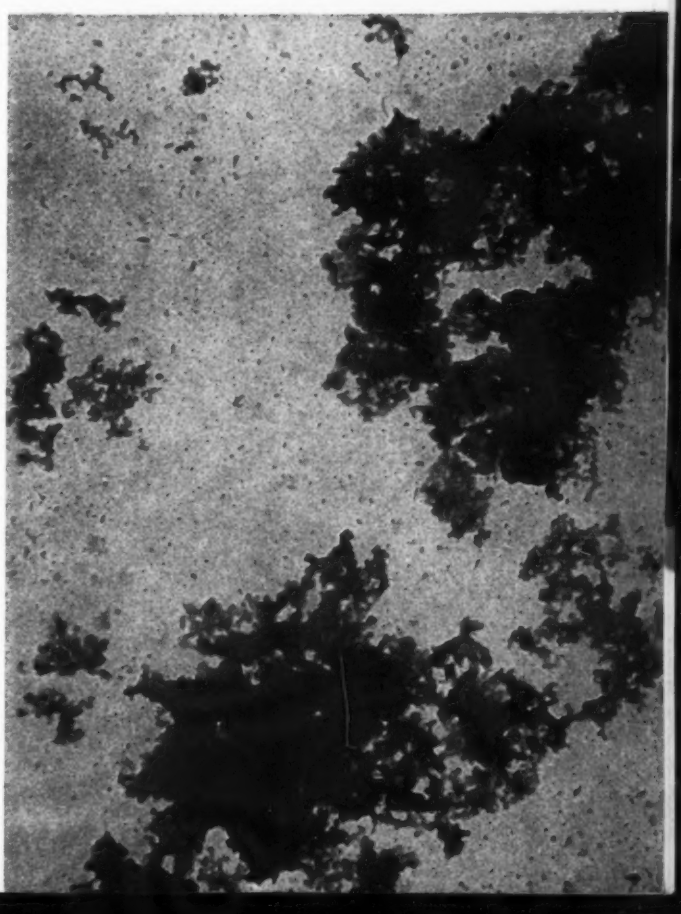
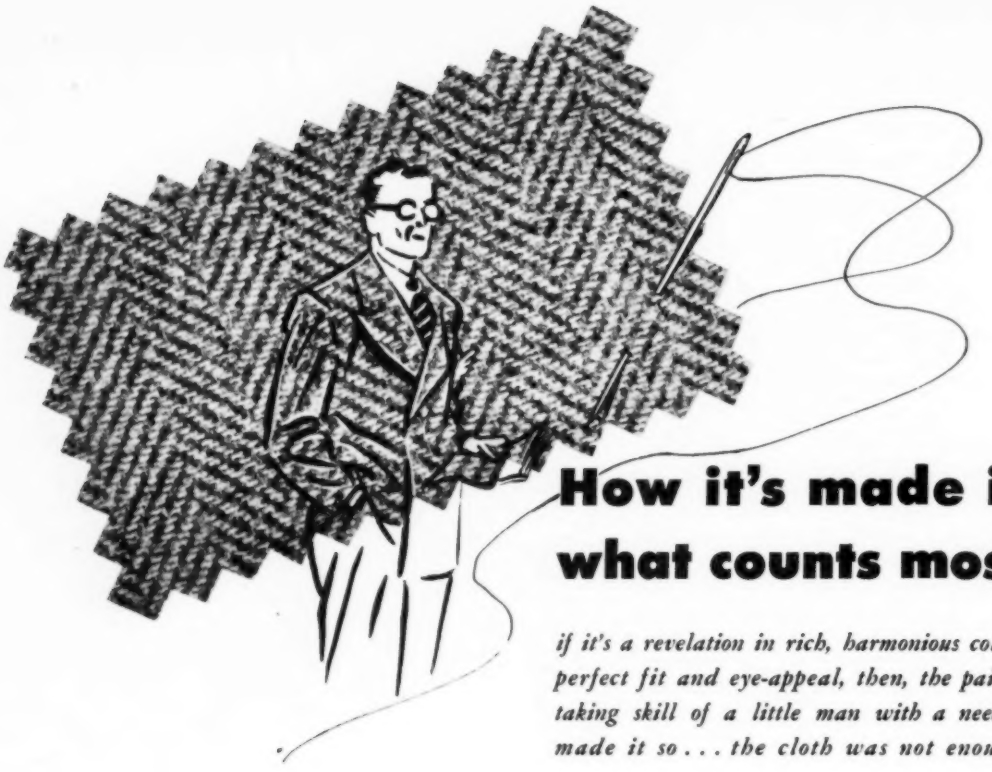


FIGURE 2. Wax emulsion 396-F22 — Photograph of Jelled Bright Drying Wax Dispersion taken with the electron microscope at a magnification of X 20 000.

Conclusions

THE size of submicroscopic particles of colloidal dimensions such as those existing in bright-drying wax dispersions can be measured with reasonable accuracy with the aid of the electron microscope. Study of particle size, correlated with other properties of such dispersions, should lead to im-



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if it's a revelation in rich, harmonious color, perfect fit and eye-appeal, then, the painstaking skill of a little man with a needle made it so . . . the cloth was not enough

. . ." and, the *wax* makes the floor, too. Distinctive appearance in dress comes from the drape of the cloth, the harmony of pattern with the natural shape of figure, the clean cut stitching that binds cloth with cloth and findings to all, all together to give the final eye-appeal that makes the suit stand out among the rest as distinctive. Again, it was the little man with the needle that made it so . . . the cloth was not enough. Floors that are "dressed" perfectly have a coat of wax that fits perfectly and wears well . . . Candy's Deluxe and Bright Beauty—distinctive among the rest thru years of painstaking research that ended with a precise method of manufacturing that produces a perfect product every time. That is why you can sell Candy's Deluxe and Bright Beauty under your own label with complete confidence and outsell all others consistently.

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portant contributions to the fundamental character of these dispersions. In time what has heretofore been merely surmised can be replaced by facts as more workers add to the store of exact knowledge in this field.

Many questions of a practical nature remain to be answered: Is there an optimum particle size which will give the highest gloss? What relation does particle size have to other properties such as water resistance and wear? What is the effect of different manufacturing procedures? What happens during aging of the dispersion? What happens during gelation?

These and other questions suggest themselves as future research problems. The electron microscope should prove a useful tool in solving some of them.

Acknowledgment is made of the work of G. Benson and J. D. Boadway of Shawinigan Chemicals Ltd. in supplying electron-microscope data.

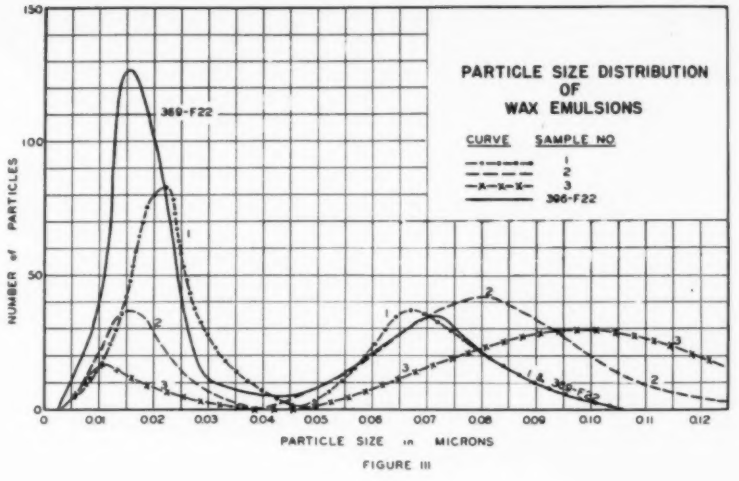

FIGURE III

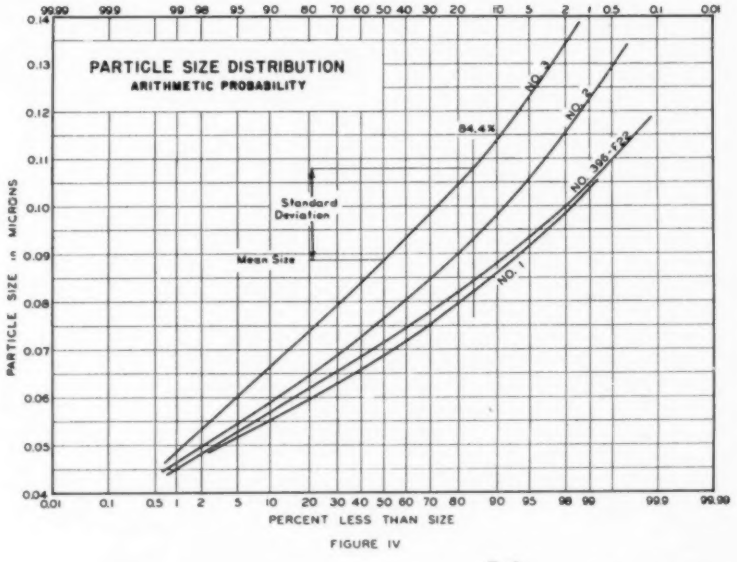

FIGURE IV

Sample No.	Mean Particle Size in Microns	Standard Deviation in Microns	Range of Size in Microns	Peak Ratio, Small to Large Particles	Soap to Wax Ratio	Increase in Gloss of Dried Film in %
1	0.0685	0.0135	0.05 -0.1	1.22	0.151	287
2	0.0765	0.0170	0.045-0.14	0.40	0.127	262
3	0.0890	0.0185	0.05 -0.16	0.195	0.115	238
396F-22	0.0723	0.0122	0.045-0.12	1.71	..	..

Floor Polish

Several formulas are given for each of various types of floor polish. The following is selected as being of interest because it is the self-polishing water-emulsion type:

	Parts
Carnauba wax	9.5
Oleic acid	2.5
Amino methyl propanol	1.2
Resin solution	15.0
Softened water	71.8

2-Amino-2-methyl-1-propanol — a wartime development — gives polishes of light color and very good water resistance when combined *in situ* with oleic or other fatty acid.

Melt the carnauba wax with the oleic acid and maintain at 85-90°C. Mix and slowly add the amino methyl propanol. Stir until the whole mass is clear. Add boiling water slowly, in small portions, with continuous stirring. During this addition the mixture becomes increasingly viscous, and when about two-thirds of the water has been added it has the appearance of petroleum jelly. At this point the emulsion reverts to an oil-in-water dispersion. As it becomes thin and soapy, the remainder of the water may be added rapidly. The total time for adding the water should be about 30 minutes. Let cool while stirring.

A resin solution is added to the emulsion and is made as follows*:

	Parts	*Or Shellac Parts*
Manila resin	1.5	1.5
Morpholine or ammonia	0.6	0.2
Water	15.1	15.5

The resin or shellac is mixed with the ammonia solution (0.880) or with morpholine. A little water is added and the mass is left overnight. Next day it is stirred and the rest of the water added in small portions. When the solution is homogeneous, impurities or undissolved resin may be removed by decanting. Both shellac and manila resins give good all-round results, but rosin is not recommended for rubber or linoleum. J. M. Vallance, *Manufacturing Chemist*, Apr. 1947, XVIII, 4.

* Wilson and Robertson, *Soap and Sanitary Chemicals*, August 1938.

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DDT and DDT Emulsion Concentrates

TWO new proposals for Federal specifications for DDT and DDT-emulsion concentrate were submitted for industry approval in July by Harry Fleisher, chairman, subcommittee on DDT, Technical Committee on Insecticides, Federal Specifications Board, Bureau of Federal Supply, U. S. Treasury Department. The industry is requested to review the contents of the proposed specifications and forward any comments or suggestions regarding the general satisfactoriness of the specifications to Mr. Fleisher, c/o Bureau of Ships (336) Navy Department, Washington 25, D. C. The new insecticide proposals, when promulgated, will govern Federal procurement of these commodities. Additional copies of the drafts from which the following summaries have been prepared are available from Mr. Fleisher. In order that a compilation of industrial comment may be presented for approval at the next meeting of the subcommittee, it is necessary that industry comments be submitted by September 15, 1947.

The proposal for DDT (dichlorodiphenyl-trichloroethane) allows two grades as specified in the contract or orders: Grade A—DDT, Aerosol, and Grade B—DDT, Technical. Each grade shall comprise 2,2-bis(p-chlorophenyl)-1 1,1-trichloroethane, free from added modifying agents; and shall comply with the detailed requirements as summarized in the following:

The physical and chemical properties shall conform to the requirements specified in the accompanying table on this page.

Grade A—aerosol—shall be a fine white crystalline powder, free-flowing and without lumps. Grade B—technical—shall be a fine to medium granular powder with a white to cream color.

The proposal specifies with regard to markings that each container of DDT be marked in compliance with existing Federal laws and also contain the following word of caution: "DDT is toxic and when in solution can be absorbed through the skin. Avoid inhaling dusts, and mist from sprays. Avoid contamination with foodstuffs."

Purchases will be made on the basis of *lot acceptance* tests and *production* tests, which involve a series of samplings, inspections and tests from time to time as will be outlined: The government inspector shall select a suitable sample from each lot for the following lot acceptance tests to be run at the place of manufacture: setting point, melting point, ash content, determination of pH by extraction, and determination of monofluorotrichloromethane insoluble material. Details of the tests are given in the copy of the proposals which may be obtained as mentioned earlier in this summary. Regarding sampling procedure for production check tests, the proposal states that from the first lot offered for delivery under a contract or order, and from every 60 lots thereafter or at intervals of 30 days, which ever is the more frequent, the inspector shall take at random a one-pound sample, which shall be sent to a government laboratory designated by the bureau or agency concerned for the tests as already specified. The following tests will be run for production checking: Setting point, melting point (Thiele - Dennis), organically - bound chlorine, ash, pH by distillation and by extraction, water-insoluble, steam volatile material, chloral hydrate, water soluble material, cyclohexanol insoluble material, monofluorotrichloromethane insoluble material.

It is noted that the proposed DDT specification is based on joint Army-Navy specification JAN-D-56a and includes several improvements in test methods.

THE proposal for a liquid, water-emulsifying insecticide concentrate of DDT, a non-explosive solvent, and an emulsifying agent states that the concentrate shall consist of at least 25.0 per cent (wt/vol) of DDT, (conforming to the requirements for grade B as stated in the first proposal mentioned in this summary) an emulsifier in such concentration as will enable the concentrate to meet the

Property	Grade A Min.	Grade A Max.	Grade B Min.	Grade B Max.
Setting point, °C	—	—	89	—
Melting point, °C	103	—	—	—
Organic chlorine, %/wt	49.5	50.5	48	51
Ash content, %/wt	—	0.05	—	0.5
Water insoluble, steam volatile material	—	(1) *	—	(2) *
Chloral hydrate, %/wt	—	0.025	—	0.025
pH by distillation	—	—	4.5	8.0
pH by extraction	5.5	7.5	5.0	8.0
Water soluble matter, %/wt	—	0.05	—	0.25
Cyclohexanone insolubles, ml	—	—	—	0.2
Monofluorotrichloromethane insolubles, ml.	—	0.01	—	—

* (1) 0.1 ml/50 gm.
(2) 0.1 ml/20 gm.

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requirements of the specification, and a suitable solvent. Each bidder, in most cases, will be expected to submit with his proposal a one-gallon sample.

The concentrate shall be clear, homogeneous and free from particles of undissolved DDT crystals or foreign matter. The appearance of the concentrate shall not be affected when examined visually by transmitted and reflected light for clarity, homogeneity, undissolved or foreign matter. The visual test shall be repeated after storage for 24 hours at 32° F., seeding with a crystal or two of purified DDT, and restoring at 32° F. for one week. The concentrate shall contain a minimum of 120 mg of chlorine per ml (as determined by a volumetric silver nitrate test) and show not more than 5 ml of separation when tested in an emulsion stability test at 80° F., or more than 10 ml. of separation when tested at 120° F., 30 minutes after formation and after reformation. In this test, the stability of the concentrate is measured in a 1:4 dilution with hard water containing chlorides of calcium and magnesium. The concentrate must not show any residual stain and only a mild residual odor when tested on bleached cotton sheeting as indicated in the proposal. Initial point in the distillation range shall be not less than 300° F., and an end point not higher than 550° F. is specified. The insecticide concentrate shall cause no more than a slight discoloration of mild steel strips in an insertion test and shall cause no crazing or softening of strips of polymethyl methacrylate plastic.

The markings shall include proper identification, precautions regarding toxicity, mixing instructions, and directions for use as a residual spray.

Directions for use of the concentrate are thought to be of interest to the readers of this summary and are therefore included in detail: "For control of flies, roaches, and mosquitoes, mix 1 part of insecticide-concentrate with 4 parts of water and apply at the rate of 1 quart per 250 square feet of walls, ceilings, floorboards, crevices, and other surfaces where the insects congregate, and other premises where use of a water-base insecticide spray is permissible. Remove or cover food, drinking water, cooking utenils, etc., before spraying. Use a coarse spray which gives good wetting. When so used, spray is effective in the control of flies, roaches, and mosquitoes for a period of 6 to 8 weeks unless removed as by weathering or washing."

The proposed DDT-Emulsion concentrate specification was based upon Navy Department specification 51-I-19, which incidentally, will still be used for Navy procurement of this commodity, since the Navy Department requires prior approval of prospective bidders for DDT-emulsion concentrate contracts.

GLYCERINE

(*From Page* 42)

During World War II, Germany produced a mixture of glycerine, polyglycerols, and glycols by the hydrogenolysis of carbohydrates. Neither this mixture nor any of the fermentation products have been found suitable for nitration. While these occasional emergency problems may be partially solved through the production of synthetic glycerine from petroleum gases (which is announced to begin commercially some time in 1948), it is probable that for many years hence most of the world's commercial production will continue to come from the fat splitting industries.

During the last war there were many complaints from glycerine users, some of whom, before the war, had been threatening to use substitutes, but when urged to do so by the War Production Board, they claimed that it was impossible to use such substitutes. Although the general public did not know the reason for the inferior quality of many household items that dried out and were unsatisfactory, it was very enlightening to learn how strong was the conviction of many compounders and manufacturers that no substitutes were usable in their particular products. As a matter of fact, the bulk of the substitutes went into motor coolants.

NORMALLY, the world production of glycerine is concentrated in those areas which have the highest standards of cleanliness and the highest per capita rate of soap consumption. Also, these same areas usually have the highest per capita glycerine consumption on account of the expansion of their chemical industries to satisfy the demand for pharmaceuticals, cosmetic and other luxury products, and modern household necessities, and on account of the industrial demand for such products as tobacco, explosives, protective coatings, cellophane and other wrappings, printing and bookbinding, textiles, adhesives, gaskets, and cork products. Before World War I, the United States imported almost half of its glycerine needs from the European area but, before World War II, had become approximately self-sufficient in its own production.

Insecticide Laws

A new and complete compilation of laws, comprising a 550-page loose-leaf volume, will be issued by the National Association of Insecticide & Disinfectant Manufacturers in the near future, according to an announcement by H. W. Hamilton of the Koppers Company, NAIDM secretary. The new book will contain all state and federal laws covering household and agricultural insecticides, fungicides, disinfectants, herbicides, rodenticides and allied caustic poisons with regulations, interpretations, and explanations.

Labeling, registration, fees, and other requirements will be covered in full. A chart showing at a glance the basic requirements of each state and a list of all enforcement offices will be included. Additions and corrections will be issued annually. The new book will be bound in leatherette five-ring loose-leaf, with page size 6 x 9. The work has been two years in preparation under the direction of John Conner, Washington attorney and general counsel for NAIDM. A limited number of copies of the new compilation will be available to firms outside of the NAIDM membership.

DDT Dust Effect on Bees

Honeybees, solitary bees, and bumblebees were killed by a 5 per cent DDT dust in 24-60 hours. Bumblebees were most resistant. F. R. Shaw, *Can. Entomol. 78*, 110.

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TRADE MARKS GRANTED

(*From Page 59*)

426,965. Insecticides and disinfectants. Filed by Boyle-Midway, Inc., Jersey City, N. J., Feb. 14, 1946. Serial No. 496,538. Published Oct. 15, 1946. Class 6.

426,971. Shave cream. Filed by Mark Cross Co., New York, Feb. 27, 1946. Serial No. 497,297. Published Oct. 15, 1946. Class 6.

426,999. Insecticides. Filed by Dorset-Jones, Inc., Baltimore, Apr. 11, 1946. Serial No. 499,996. Published Oct. 29, 1946. Class 6.

427,062. Detergent. Filed by Katz Drug Co., Kansas City, Mo., Dec. 18, 1944. Serial No. 477,704. Published Oct. 29, 1946. Class 4.

427,068. Industrial soap powder. Filed by Gray and Gray, Venice Calif., May 28, 1945. Serial No. 483,852. Published Sept. 25, 1945. Class 4.

427,072. Soaps. Filed by Associated Products, Inc., Chicago, Aug. 22, 1945. Serial No. 487,408. Published Nov. 12, 1946. Class 4.

427,094. Liquid cleaner. Filed by Chemical Industries, San Francisco. Nov. 30, 1945. Serial No. 492,473. Published Nov. 12, 1945. Class 4.

427,096. Shoe interior shampoo cleaner. Filed by C. P. X. Products Co., Waterbury, Conn., Dec. 13, 1945. Serial No. 493,170. Published Nov. 12, 1946. Class 4.

427,099. Wetting agent. Filed by John T. Stanley Co., New York, Dec. 28, 1945. Serial No. 493,984. Published Oct. 29, 1946. Class 4.

427,104. Toilet soaps. Filed by Park & Tilford, New York, Jan. 25, 1946. Serial No. 495,405. Published Nov. 12, 1946. Class 4.

427,105. Household cleaner. Filed by Colgate-Palmolive-Peet Co., Jersey City, N. J., Jan. 29, 1946. Serial No. 495,591. Published Oct. 29, 1946. Class 4.

427,106. Soap and household cleanser. Filed by Colgate-Palmolive-Peet Co., Jersey City, N. J., Jan. 29, 1946. Serial No. 495,592. Published Oct. 29, 1946. Class 4.

427,107. General purpose cleaner. Filed by Voo-Doo Chemical Sales, Inc., Long Beach, Calif., Feb. 2, 1946. Serial No. 495,928. Published Nov. 12, 1946. Class 4.

427,110. Soap. Filed by Zitomer Chemists, Inc., New York, Feb. 9, 1946. Serial No. 496,357. Published Oct. 29, 1946. Class 4.

427,115. Cleaning and waxing preparations. Filed by A. S. Harrison Co., New York, Feb. 19, 1946. Serial No. 496,908. Published Nov. 12, 1946. Class 16.

427,118. Liquid solvent and cleaner. Filed by General Solvents Sales Co., Rochester, N. Y., Feb. 23, 1946. Serial No. 497,090. Published Nov. 12, 1946. Class 4.

427,122. General household cleanser. Filed by Theobald Industries, Kearny, N. J., Mar. 6, 1946. Serial No. 497,752. Published Nov. 12, 1946. Class 4.

427,123. Cleanser. Filed by Theobald Industries, Kearny, N. J., Mar. 6, 1946. Serial No. 497,753. Published Nov. 12, 1946. Class 4.

427,126. Sudsing cleaner. Filed by Procter & Gamble Co., Cincinnati, Mar. 14, 1946. Serial No. 498,253. Published Nov. 12, 1946. Class 4.

427,174. Washing compound. Filed by Climalene Co., Canton, O., July 18, 1943. Serial No. 505,809. Published Nov. 12, 1946. Class 4.

427,232. Shaving soap. Filed by Brooks Brothers, New York, Feb. 17, 1945. Serial No. 478,946. Published July 9, 1946. Class 4.

427,383. Insecticides. Filed by Killer Diller Corp., Milwaukee, June 8, 1944. Serial No. 471,024. Published Nov. 5, 1946. Class 6.

427,413. Metal cleaning preparation. Filed by Neilson Chemical Co., Detroit, Oct. 5, 1945. Serial No. 489,599. Published Nov. 19, 1946. Class 6.

427,428. Parasiticides. Filed by California Spray-Chemical Corp., Richmond, Calif., Nov. 6, 1945. Serial No. 491,150. Published Nov. 19, 1946. Class 6.

427,432. Rat and mice poison. Filed by De Pree Co., Holland, Mich., Nov. 15, 1945. Serial No. 491,633. Published Nov. 5, 1946. Class 6.

427,440. Insecticides. Filed by Knox Chemical Co., Chicago, Dec. 3, 1945. Serial No. 492,565. Published Nov. 5, 1946. Class 6.

427,481. Metal cleaner. Filed by Parker Rust Proof Co., Detroit, Mar. 15, 1946. Serial No. 498,307. Published Nov. 12, 1946. Class 6.

427,484. Insecticide, disinfectant and deodorant. Filed by Hygienic Sanitation Co., Philadelphia, Mar. 18, 1946. Serial No. 498,390. Published Nov. 5, 1946. Class 6.

427,501. Insecticide. Filed by Distributors, Inc., St. Paul, Minn., Mar. 28, 1946. Serial No. 499,113. Published Nov. 26, 1946. Class 6.

427,530. Film cleaner and preservative. Filed by R. D. Hanish Co., Columbus, O., Apr. 15, 1946. Serial No. 500,214. Published Nov. 26, 1946. Class 6.

427,560. Tooth paste, shampoo. Filed by Helene Pressl, Inc., New York, May 1, 1946. Serial No. 501,276. Published Nov. 19, 1946. Class 6.

427,567. Insecticides. Filed by Socony-Vacuum Oil Co., New York, May 23, 1946. Serial No. 502,666. Published Nov. 26, 1946. Class 6.

427,643, Cleaning sticks. Filed by Nu-Pro Manufacturing Co., St. Louis, June 10, 1944. Serial No. 471,128. Published Nov. 5, 1946. Class 4.

427,644. General cleaner. Filed by Pittsburgh Chemical Laboratory, Pittsburgh, Aug. 29, 1944. Serial No. 473,705. Published Nov. 26, 1946. Class 4.

427,656. Cleaning compounds. Filed by Noble Chemical Corp., Chicago, Apr. 16, 1945. Serial No. 482,216. Published Nov. 19, 1946. Class 4.

427,662. Cleansers. Filed by Piezo Manufacturing Corp., New York, July 31, 1945. Serial No. 486,546. Published Nov. 19, 1946. Class 4.

427,675. Cleaning fluid. Filed by Mercer Oil & Chemical Co., Philadelphia, Nov. 13, 1945. Serial No. 491,476. Published Nov. 19, 1946. Class 4.

427,697. Cleaning preparation. Filed by Mathieson Alkali Works, Inc., New York, Jan. 12, 1946. Serial No. 494,693. Published Nov. 19, 1946. Class 4.

427,707. Silver polish. Filed by Joseph F. Pieper, Covington, Ky., Feb. 15, 1946. Serial No. 496,659. Published Nov. 19, 1946. Class 4.

427,708. Solvent and cleaner. Filed by General Solvents Sales Co., Rochester, N. Y., Feb. 23, 1946. Serial

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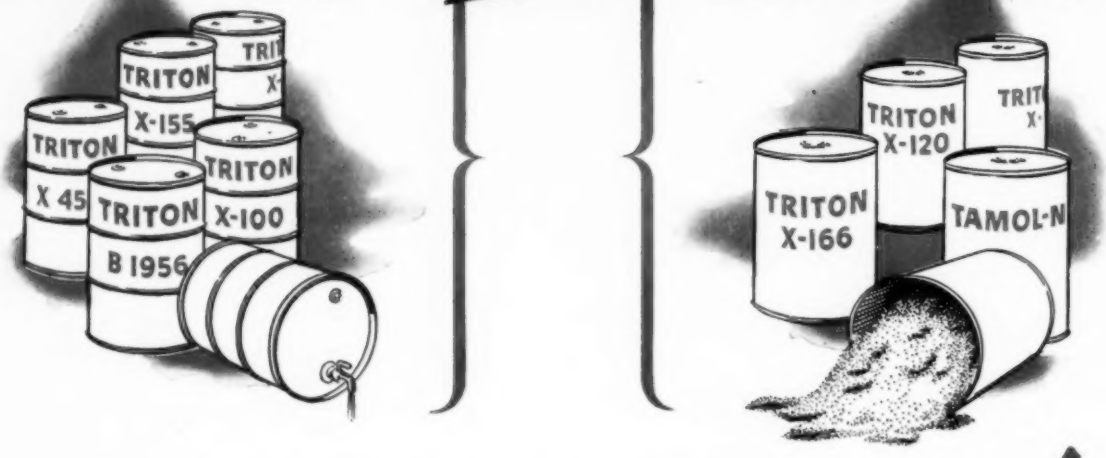

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No. 497,089. Published Nov. 19, 1946. Class 4.

427,720. Furniture cleaning preparation. Filed by Doran Laboratories, Inc., New York, Mar. 21, 1946. Serial No. 498,689. Published Nov. 26, 1946. Class 4.

427,721. Type and roller cleaners. Filed by Herbert Chemical Co., Cincinnati, Mar. 21, 1946. Serial No. 498,696. Published Nov. 19, 1946. Class 4.

427,722. Soap powder. Filed by Edw. Livingston & Sons, Kansas City, Mo., Mar. 22, 1946. Serial No. 498,783. Published Nov. 19, 1946. Class 4.

427,724. Washing powder. Filed by American Basic Chemicals, Inc., Baltimore, Mar. 25, 1946. Serial No. 498,877. Published Nov. 26, 1946. Class 4.

427,837. Detergent. Filed by Twinklecraft Laboratories, Inc., Jackson Heights, New York, Feb. 26, 1946. Serial No. 496,509. Published Dec. 10, 1946. Class 4.

428,054. Pest repellent. Filed by Sparhawk Co., Sparkill, N. Y., May 6, 1944. Serial No. 470,008. Published Nov. 6, 1945. Class 6.

428,059. Shampoo. Filed by Raymond Laboratories, St. Paul, Minn., Feb. 28, 1945. Serial No. 480,350. Published Oct. 23, 1945. Class 6.

428,062. Degreasing fluid. Filed by The Aloyl Co., St. Paul, Minn., Apr. 30, 1945. Serial No. 482,820. Published Dec. 3, 1946. Class 6.

428,065. Tooth paste and tooth powder. Filed by Fluoricite, Danbury, Conn., May 22, 1945. Serial No. 483,663. Published Dec. 3, 1946. Class 6.

QUATERNARY BACTERICIDES

(*From Page* 121)

static effect of these compounds. The new medium contains a basal component of thioglycollate broth, asolectin as the disinfectant neutralizer, Tween 20 as the dispersing agent, and agar to give a semi-solid broth. The character of the medium permits discreet colony growth and allows detection of partial inhibition, as well as permitting enumeration of colonies where small numbers of viable organisms are present. The clarity of medium in the presence of large quantities of quaternary also aids in this quantitative measurement of organisms. Since bacteriostasis, as indicated by these data, is more pronounced with small than with large numbers of organisms, or in the presence of a high quaternary-organism ratio, this last advantage of the medium is self-evident. The importance of this advantage is emphasized by the fact that small numbers, rather than massive doses, are more the order of contamination of eating utensils.

This study has been sponsored by the National Sanitation Foundation, Ann Arbor, Michigan, as part of a study on chemical sanitization of eating and food handing utensils.

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Since the *o,p'* isomer is the principal impurity in technical DDT and this isomer is known to be less toxic than *p,p'*-DDT to 4th instar larvae of *Anopheles quadrimaculatus*, a study was made to determine the effect of various proportions of the *o,p'* isomer on the toxicity of DDT. A study of various mixtures showed that *p,p'*-DDT is about 6 times as toxic as *o,p'*-DDT to this insect. H. A. Jones, H. H. Incho, and C. C. Deonier. *J. Econ. Entomol.* 39, 672-3.

DDT RESIDUES

(*From Page* 129)

illustration, the detailed results of the tests with one deposit of 70 mg. per sq. ft. on glass over a period of 21 months are shown in Table III. (See Page 145.)

Individual Surfaces: The results with the nine surfaces so far treated with the DDT solution are graphically presented in Fig. 4. It will be noted that, at the time of writing, tests are still being continued with six of these.

Discarding Surfaces: The question of an appropriate time to discard a series of surfaces was a matter of some importance, in order to permit as little delay as possible in proceeding to further tests. It was decided to discard a given surface when with two consecutive tests a percentage of mortality lower than 75 per cent was recorded with the higher deposit. The justification of this decision lies, firstly, in an examination of the data presented in Fig. 4. When mortalities as low as 75 per cent are recorded with the high deposit, the smaller deposits have almost completely broken down. Secondly, for application to practical work, it was considered that failure to kill 25 per cent of the flies in a building or house would be tantamount to no control at all.

As a further check, before surfaces are discarded, they are subjected to a special test of exposures ranging from 10 to 50 minutes. It was found that no significant difference in mortality was recorded over this time range. These results are also of interest in connection with the previous discussion of length of exposure for the standard tests. A typical series of such results, with plain cement, is shown in Table IV. (See Page 145.)

DISCUSSION

AS MANY of the experiments in this long term project are still under way, it would not be desirable to draw too many definite conclusions from the data presented. Of particular interest at present are the long sustained and high mortalities recorded with the two very smooth non-absorptive surfaces, glass and masonite (hard pressed wall board). Two comparatively absorptive surfaces, "Ten-Test" (insulating wall board) and planed unpainted pine, are still showing toxic residues after 20 months of exposure. Wall-paper, only exposed so

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TABLE III

REPLICATION OF MORTALITIES

Representative Surface, Glass with deposit of 70 mg. per sq. ft.

Monthly Test No.	1	2	3	4	5	6	7	8	9
Percentage mortality	98.3	100.0	85.0	100.0	94.1	79.1	83.3	58.3	53.3
recorded with 120	100.0	100.0	93.3	100.0	93.3	58.3	86.6	93.3	49.1
flies in each of 5	96.7	98.3	70.0	100.0	100.0	64.1	81.6	96.6	58.3
replicates	92.5	100.0	81.6	100.0	93.3	78.3	73.3	80.8	53.3
	96.7	....	72.5	100.0	96.6	87.5	98.3	87.5	50.0
Mean	96.8	99.6	80.5	100.0	95.4	73.4	84.6	83.3	52.8
Standard deviation	....	....	9.4	....	....	11.9	9.0	15.2	3.61

Monthly Test No.	10	11	12	13	14	15	16	17	18
Percentage mortality	29.1	51.6	40.0	53.3	54.1	63.3	70.8	41.6	25.0
recorded with 120	26.6	55.8	41.6	41.6	60.0	67.5	75.0	25.0	18.3
flies in each of 5	31.6	46.6	53.3	63.3	49.1	65.8	70.0	58.3	20.0
replicates	35.0	57.5	49.1	51.6	56.6	62.5	79.1	26.6	20.8
	30.8	75.8	47.5	50.0	61.6	65.0	71.6	28.3	25.8
Mean	30.6	57.4	46.3	51.9	56.3	64.8	73.3	35.9	21.9
Standard deviation	3.10	11.0	5.47	7.7	4.96	1.99	3.76	14.1	3.26

far for 15 months, is still giving satisfactory kills.

Four surfaces (plain cement, fresh painted wood, fresh white-washed cement and one month old white-washed cement), which broke down fairly early in the project should still give significant mortalities under practical conditions during one summer season if allowance is made for poor mortalities liable to be encountered soon after application.

There was a tendency for some of the surfaces to show lower mortalities at the first testing made 24 hours after the spray application, and this observation is of importance for the future design and analysis of experiments of this type.

In comparing the difference in results between fresh and one month old white-washed cement, it would seem that the former gave slightly better mortalities over a longer period than the latter material, but that no definite conclusions can be drawn between the two methods of application.

On a freshly painted surface the DDT was temporarily inhibited in its action, but later was available in sufficient quantities to give a fair mortality with the heaviest deposit of 149 mg. per sq. ft. Clapp et al. (1947) have also reported a similar effect in tests against *Anopheles quadrimaculatus*.

It is also of considerable interest to compare the results so far achieved on houseflies with the data presented by Clapp and his co-workers, in work against *A. quadrimaculatus*. Barring a detailed analysis at the present time, it would seem that the work of these investigators, in which a wider range of materials was tested than those described in the present paper, shows very similar tendencies in the life of DDT deposits on various types of surfaces.

ACKNOWLEDGMENTS

THE authors wish to acknowledge the valuable guidance afforded by Dr. C. R. Twinn, Division of Entomology, Science Service, Ottawa, Ont., under whose direction the investigation falls, and by W. A. Ross, in charge of Fruit Insect Investigations, Division of Entomology. In the early stages of the investigation, many of the techniques were worked out by M. D. Proverbs, graduate assistant, Division of Entomology. H. B. Wressell of the Dominion Entomological Laboratory, Chatham, Ont., also assisted greatly at the beginning of the work. Acknowledgment is also made to E. J. Duff, assistant technician, Division of Entomology, for his careful work in carrying on the routine tests during the last eighteen months. The illustrations were prepared by L. St. Laurent, Division of Entomology. We are very grateful to E. K. Raynor of the Insecticide Testing Laboratory, Plant Products Division, Ottawa, Ont., for his kindness in maintaining the steady supply of fly pupae required for the work.

The chemical assay of the DDT used in the experiments was made by the Department of Chemistry, McGll University, Montral, P.Q.

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TABLE IV

Percentage Mortality of Five Replicates of 120 Flies Exposed to Plain Cement, Sept. 23, 1946. Surfaces sprayed Oct. 16, 1945.

Exposure in minutes	*DDT deposit mg. per sq. ft.*		
	70	108	149
10	16.6	29.1	58.3
20	25.0	36.6	61.6
30	18.3	33.3	54.1
40	31.6	34.1	43.3
50	20.8	31.6	50.0
Mean	22.4	32.9	53.4

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TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

Insecticidal Aerosols

Dichlorodifluoromethane ("Freon-12"), is the most suitable liquefied gas for aerosols. It is a poor solvent for many insecticides, but a mutual solvent can be used. The aerosol solution most extensively used consists of 1 per cent or less of pyrethrum extract and 2 per cent of sesame oil dissolved in "Freon-12." For mosquitoes a pyrethrum extract was developed containing 20 per cent by weight of total pyrethrins and very little freon-insoluble material. One pound of this solution is more effective than 2 gallons of the old-type fly spray.

The particle size of the aerosol can be controlled very easily by the amount of nonvolatile material included. When "Freon-12" is used, the optimum particle size appears to be that produced by 15 per cent of nonvolatile material. The vapor-pressure lowering caused by a solute such as sesame oil in freon is so slight that it is of no consequence in the practical use of the aerosol. Tests show that pyrethrum in aerosol form is about twice as toxic as when applied in a spray against normal flies. The rate of knockdown is slower for the aerosol.

Among other insecticides tested in aerosol form were the thiocyanates, nicotine, rotenone and derris resin, phenothiazine, phenoxathiin, DN, and many others. Nicotine applied by this method is twice as effective as when applied in a burning mixture. Mosquitoes and flies can be cleaned out of a 27 million cubic-foot factory without interruption of the regular work. In closed spaces less expensive propellants than freon can be used, such as monochloromethane, since most of the insecticides will be toxic to man anyway. L. D. Goodhue. Compressed Gas Manufacturers Assoc., 31st Annual Rept. No. *31*, 67-71.

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New Synergist

A very strong synergist for pyrethrins is (3,4-methylene-dioxy-6-propyl benzyl) butyl diethylene-glycol ether. The compound is practically nontoxic to warm-blooded animals. It is a colorless liquid soluble in the common organic solvents. The activity of piperonyl butoxide — the name given the technical product containing 80 per cent of the pure compound—is such that very low concentrations of pyrethrins can be combined with the compound to give effectiveness which would be uneconomical if pure pyrethrins were used. H. Wachs, *Science 105*, 530-31 (1947).

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Hyamine 1622 Deodorant

The use of "Hyamine 1622," an odor destroying quaternary ammonium compound, was described in an article: "Deodorizing Without Masking," published in July, 1947 issue of the *Rohm and Haas Reporter*, house organ of Rohm & Haas Company, Philadelphia, manufacturers of the compound described. Hyamine 1622 has been supplied by R. & H. for some years to manufacturers of germicides and bactericides for incorporation into products used in the sanitizing of dishes, and glasses, the preparation of disinfecting rinses for hospital and veterinary use, and the sanitation of dairy and food processing equipment, etc. It is described as being a true deodorant in that it removes objectionable odors without imparting any odor of its own. For surface odors, a concentration of 0.1 per cent may be used, but a lower ratio is suggested for space spraying in confined areas. Aqueous mists in a concentration of about 0.05 per cent have been found entirely satisfactory under such circumstances. The compound, in concentrations of use, is said to be tasteless, odorless and without corrosive effect. The material is available in quantity either as the 25 per cent aqueous solution or as finely powdered crystals.

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Control of Sand Flies

DDT dispersed at 2 quarts of 5 per cent solution per acre in mangrove swamps and salt-marsh areas in Florida, gave a high degree of control of adult sand flies for 4 days, and some control for 2 weeks. At 1 gallon per acre, 6 days' protection was given. A. H. Madden, A. W. Lindquist, O. M. Longcoy, and E. F. Knipling. *Florida Entomol. 29*, 5-10.

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Rodenticide

A sodium or a potassium salt of a phenol containing at least one nitro group as a substituent, such as dinitro-ortho-cresol, is mixed with water, and a dispersing agent such as soap, and subsequently with a food base such as a fat or molasses, to form a pasty mass suitable for killing rats and mice. H. Atlas. British Patent No. 567,808.

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Oral Toxicity of DDT

Symptoms of chronic poisoning were observed in all rats fed diets containing 100-800 p.p.m. of DDT for two weeks. Diets containing over 400 p.p.m. produced tremors and other nervous symptoms. Diets containing 400-800 p.p.m. retarded growth of female rats; only the diet containing 800 p.p.m. retarded the growth of males. DDT did not affect the food consumption. O. G. Fitzhugh and A. A. Nelson. *J. Pharmacol.* 89, 18-30 (1947).

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Aerosol Formula

The basic DDT aerosol formula of 5 per cent of DDT plus 10 per cent of cyclohexanone, has been modified by addition of various materials for use against mosquitoes and houseflies. Addition of fatty materials such as propylene glycol monooleate, propylene glycol monolaurate, and oleic acid, or wetting agents such as dioctyl sodium sulfosuccinate and sulfonated sperm oil, did not increase the effectiveness of the basic formula.

Motor oils having S.A.E. viscosity of 10 and 70 were as effective as sesame oil in pyrethrum aerosols containing 0.4 per cent of pyrethrins and 8 per cent of oil, against houseflies. These constituents increased the effectiveness of the DDT formula. The viscosity of the oil did not influence the results. A formula containing 3 per cent of DDT, 5 per cent of cyclohexanone, 5 of motor oil, and 0.3 of pyrethrins is relatively stable at low temperatures, is safe to use in the presence of plastic materials, and is effective against both mosquitoes and houseflies. A. H. Madden, H. O. Schroeder, E. F. Knipling, and A. W. Lindquist. *J. Econ. Entomol.* 39, 620-3.

Methyl Bromide Fumigation

The use of methyl bromide for controlling the human body louse in army clothing and bedding by fumigation in sustained and dissipated vacuum is described. All stages of the insect are killed by 1 pound of methyl bromide per 100 cubic feet in 15 minutes at temperatures above 24° C. At 1-10° C., under sustained and dissipated vacuum, a 1.5-pound dose was effective in 35 minutes. With lower doses and shorter exposure, the sustained vacuum was more reliable than the dissipated vacuum. Molting nymphs were more resistant to the gas when chilled prior to treatment. The eggs were less resistant than the active stages. P. C. Stone and D. W. LaHue. *J. Econ. Entomol.* 39, 581-8.

Cetyl Pyridinium Chloride

Killing dilutions of cetyl pyridinium chloride for *Salmonella typhimurium* were determined by the F.D.A. in-vitro method. The results agreed well with in-vivo findings obtained by injecting mice with suspensions treated for 5-10 minutes with serial dilutions of the compound. Killing dilutions ranged from 1:30,000 to 1:60,000. After treatment with this quaternary ammonium compound the organism was not detoxified by contact with body fluids or tissues. B. A. Kenner, R. A. Quisno, M. J. Foter, and I. W. Gibby. *J. Bact.* 52, 449-51 (1946).

Correct Lethalaire Formula

In our June issue we published an incorrect percentage of DDT in the formulation of the "Lethalaire" aerosol insecticide for use in greenhouses. The correct amount of DDT in this formulation is five per cent. Lethalaire aerosol insecticides and portable containers are produced by Virginia Smelting Co., West Norfolk, Va.

Continues Fellowship

A continuation of the annual fellowship at the Department of Entomology, University of Delaware was announced July 15th by G. L. Schuster, director of the University's agricultural experiment station. Work on the $10,000 fellowship sponsored by Hercules Powder Co., Wilmington, and under the direction of Dr. L. A. Stearns will be concerned primarily with extensive field tests on "Toxaphene." All research work will be handled by two Hercules fellows and their assistants. University of Delaware's Department of Entomology also co-operated in the research and development work on "Thanite," Hercules' insecticide for animal and household sprays.

Mothproofing Agents

Impregnation of wool with a 1 per cent solution of methyl trithioallophanate in acetone, or a 2 per cent solution of phenyl dithiobiuret, dithiobiuret, or *para*-tolyl dithiobiuret, reduced injury significantly when the wool was exposed to clothes moths. E. W. Bousquet and H. G. Guy, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,410,862.

Poisoning Rats With ANTU

Adult domestic Norway rats accepted ANTU when mixed with the stock diet in concentrations as high as 10 per cent. In all concentrations from 0.1 to 10 per cent the poisoned food killed 100 per cent of the rats. Lower concentrations of ANTU in the food gave a 100 per cent survival. When fed food containing 0.005-0.05 per cent for 14 days, the rats developed both a marked tolerance and a marked refusal. Lower concentrations failed to produce either. The tolerance and refusal decreased or even disappeared after 30 days. C. P. Richter. *Proc. Soc. Exptl. Biol. Med.* 63, 364-72.

Organic Larvicides

Of 6,000 organic compounds tested as suspensions against 4th instar larvae of the mosquito, *Anopheles quadrimaculatus*, only 175 caused 50 per cent mortality in 48 hours at 1 p.p.m. or less. Of these, the following compounds showed toxicity at 0.1 p.p.m.: 1-trichloromethyl-2,2′-methylene bis (4,6-dichlorophenyl acetate); chlorinated biphenyl (Aroclor 1242); hexachlorocyclohexane crude; 2,4-dinitro-6-cyclohexyl phenyl benzoate; 2,4-bis(trichloromethyl)-6-nitro-1,3-benzodioxan; *para*-isobutoxyphenethyl alcohol; chaulmoogric acid; dioctyl sulfone (mixed isomers); distyrylphenol; isobornyl ethyl xanthoacetate; sodium fluoroacetate; 2-ethyl butyl furylacrylate; butyl naphthenate; piperonyl cyclohexenone; allyl salicylate; "synthetic 3956"; 3-(2-cyclohexyl phenoxy)propyl thiocyanate; dipentenyl methyl *alpha*-thiocyanatopropionate; tolane (diphenyl acetylene); DDT. In other tests, *gamma*-hexachlorocyclohexane proved more toxic than the crude product containing 10-12 per cent of this isomer. C. C. Deonier, H. A. Jones, and H. H. Incho. *J. Econ. Entomol.* 39, 459-62.

Insect Repellent

Compositions containing 2-ethyl-2-butyl-1,2-propanediol, either alone or in suitable solvents, are useful as insect repellents, especially against flies and mosquitoes. S. W. Tribit, to U. S. Industrial Chemicals. U. S. Patent No. 2,413,803.

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Cation-Active Germicides

CATIONIC agents are equally effective surface active materials at high dilution in inhibiting the growth of both Gram-positive and Gram- negative bacteria; they are more active in alkaline media than in acid. The effect of structure on germicidal activity received considerable study. In general, the chain length of the liophilic group of cationic agents is most advantageous at C_{12}-C_{16}. Many variations in structure have been found effective, including: (a) cyclic amines such as cetyl pyridinium chloride; (b) compounds containing 2 alkyl groups attached to the nitrogen atom to give dialkyl methyl benzyl ammonium chlorides; (c) compounds in which oxygen atoms are introduced in the long chain as amide linkages such as lauric acid esters of colaminoformyl dimethyl pyridinium chloride; (d) compounds containing an aromatic ring in the long chain, such as para-tertiary octyl phenoxy ethoxy ethyl dimethyl benzyl ammonium chloride; and (e) compounds containing unsaturated links in long-chain alkyl groups, such as 9-octadecenyl dimethyl benzyl ammonium chloride.

Quaternary Ammoniums

ALTHOUGH quaternary ammonium compounds are several times as costly as coal-tar disinfectants, their high killing power has won for them an assured place in the sanitation field. Because they are nonirritating, noncorrosive, and nontoxic, fields are open to them that are closed to the cheaper materials lacking these properties. Present production is over 3,000,000 pounds annually.

Most of the present quaternary ammonium germicides have relatively good wetting action and poor detergent action. While their surface-active properties no doubt play a part in germicidal action, they are not the most important properties. Due to the wetting action of the quaternary ammonium compounds, they have an important additional advantage over iodine, alcohol, and other accepted antiseptics. When properly used, the quaternary ammonium germicides are highly active in the cold sterilization of medical and dental instruments. More direct medical applications are in disinfection of wounds, wet dressings, and for treatment of skin lesions caused by certain fungi. In a recent study, the activity of sodium hypochlorite, chloramine T, and several quaternary compounds were compared as to efficiency in sanitizing beverage glasses. The quaternaries were as effective or slightly more active in reducing the bacterial counts of the used glasses. Both types were definitely superior to the slow-acting chloramine T. While the residual chlorine of sodium hypochlorite fell about 26 per cent during the test period, the residuals of quaternaries were the same at the end of the runs as at the beginning. Also cationic neutralizing agents in the rinse waters did not materially interfere with sanitizing action.

Phenol Coefficients

INCONSISTENCY of the composition of the culture media, particularly the peptones, has been considered responsible for some of the inconsistent end-points of phenol-coefficient test results on quaternary ammonium and related germicides. To remove this feature, semisynthetic media composed of more reproducible ingredients have been proposed for use in testing the compounds. Mutation or "bacterial dissociation" of the test organisms, which may result in an increase or decrease in sensitiveness of the bacteria to the test solutions, may also be a contributing factor to fluctuations in end-titers. The size of the inoculum subcultured by the loop transfer, and in particular the smaller volume carried over in testing surface-tension depressants, has been considered responsible for unusually high values on quaternary ammonium antiseptics.

Certain investigators believe that an unequal distribution of bacterial cells occurs in surface-active solutions which results in the organisms adhering to the solid surfaces such as the walls of glass test tubes, etc., thereby preventing a representative sample from being transferred to the subculture tube. Substitution of rubber plastic, or paraffin-coated tubes, however, fails to show any significant differences in phenol coefficients from those obtained in glass tubes. C. A. Lawrence. *Chem. Industries 60,* 44-7 (1947).

DDT Determination

The method consists in liberating the chlorine in DDT by heating with a solution of potassium hydroxide in 99 per cent alcohol under a reflux condenser. The heated mixture is acidified with 2 Normal nitric acid, transferred to a separatory funnel, and the water layer drawn off. The oily layer must be thoroughly washed and shaken in order to obtain all the material. Silver nitrate and ferric ammonium alum solution are added to the aqueous filtrate. Excess of silver nitrate is titrated with 0.1 Normal ammonium thiocyanate. C. Ferreira. *Anais faculdade farm. odontol, Univ. sao Paulo 4,* 218-21; through *Chem. Abs.*

Salicylaldehydes

Alkyl and halogen derivatives of salicylaldehydes are promising disinfectants. 3,5-Dichlorosalicylaldehyde, 3,5-dibromosalicylaldehyde, and 3-bromo - 5 - tert - butylsalicylaldehyde, were among the more active derivatives studied. The preliminary experiments indicate that the compounds are active against both fungi, and Gram-negative and Gram-positive bacteria. L. C. Felton and J. H. Brewer, *Science* 105, 409-10 (1947).

Aquatic Insects

Various species of aquatic insects show great differences in susceptibility to DDT. On ponds a 12 per cent solution of DDT on oil applied at 1 gallon per acre (1 pound of DDT) exterminated practically all the surface insects and those breathing at the surface. Most free-swimming or crawling insects in ponds were severely reduced in numbers and some were exterminated. Insects in the bottom of ponds were relatively safe even at dosages of 5 pounds of DDT per acre. C. H. Hoffmann, H. K. Townes, R. E. Sailer, and H. H. Swift. U. S. Dept. Agr., Bur. Entomol. Plant Quarantine E-702, 20 pp. (1946).

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INSECTICIDE ACT

(*From Page 117*)

The powers given to the Secretary under section 6(1), (2) and (3) are very broad. However, since they provide for public hearings before putting them into effect, it is to be assumed that it was the intention of the framers of the Act that weighty consideration would be given to the data submitted, and the representations made by the manufacturers of the products concerned and by other authorities.

Other provisions of this section are similar to those in effect under the Act of 1910. The provision with reference to action after hearing in connection with alleged violation of the Act, differs in that the Secretary is not required to take criminal or libel proceedings in the case of "minor violations whenever he believes that the public interest will be adequately served by a suitable written notice or warning." (This procedure was followed in administering the Act of 1910, although it did not specifically provide for it.)

No hearing is provided for prior to seizure action. (Sec. 9.) Seizure is designed to remove promptly from the market a product that is badly misbranded or adulterated, or unsafe to use, and to await a hearing before seizure is made would nullify the benefit of this action.

Penalties

SEC. 8. The penalties for violation of the Act are greatly increased over those provided for in the Act of 1910. In the case of the shipment of a product that has not been registered; or of a product which differs in composition from, or the claims or directions for use differ "in substance" from the representations made in connection with its registration, the person violating the Act shall be fined "not more $1,000." The penalty for violating any other provision of the Act (except in the case of violation where the product was registered "under protest") is a fine of not more than $500 in the case of a first offense, and not more than $1,000 or imprisonment for not more than one year, or both such fine and imprisonment, on conviction for each subsequent offense: *Provided*, That an offense committed more than five years after the last previous conviction shall be considered a first offense: *And provided further*, That in any case where a product was registered "under protest" and the registrant was issued a warning, "he shall in each instance upon conviction for an offense concerning which he was warned, be fined not more than $1,000 or imprisonment for not more than one year, or both such fine and imprisonment"; and the registration of the article shall terminate automatically.

Any person who holds a guarantee in accordance with the provisions of section 7a(1) of the Act is exempt from the penalty provisions.

Another new provision is that providing for a fine of not more than $10,000 or imprisonment for not more than three years, or both such fine and imprisonment, in case any person, "with intent to defraud", uses or reveals information relative to formulas of products acquired in connection with their registration. This provision is, of course, designed to prevent administrating officials, or others connected with the enforcement of the Act, from using, to their own advantage, information acquired while performing their official duties.

Seizures (Sec. 9)
Imports (Sec. 10)

THE provisions with respect to seizures and imports are substantially the same as under the Act of 1910. Imported economic poisons must be registered and labeled in accordance with the provisions of the Act before being shipped or offered for shipment in interstate commerce.

Effective Date

SEC. 15. The Act, as applied to devices, is effective from the time of its enactment (June 25, 1947); as to rodenticides and herbicides, six months after enactment (December 25, 1947); and as applied to insecticides, fungicides, and all other economic poisons, one year after enactment (June 25, 1948): *Provided*, That the Secretary, upon application, may at any time within one year after sections 3 (prohibited acts), 8 (penalties), 9 (seizures), and 10 (imports) become applicable, exempt, under such terms and conditions as he may prescribe, any economic poison from the provisions of the Act if such economic poison was labeled, shipped and delivered by the manufacturer thereof prior to the time the sections referred to became applicable to such economic poison, and in case of an insecticide or fungicide if it is not or will not be in violation of the provisions of The Insecticide Act of 1910.

Section 16 provides that The Insecticide Act of 1910 is repealed effective one year after the date of the enactment of this Act (June 25, 1948), except that with respect to violations or appeals still pending, and with respect to insecticides and fungicides exempted by the Secretary in accordance with the provisions noted above (section 15), the Act of 1910 shall remain in full force for the purpose of sustaining any suit, or other proceeding, relative to violations in connection with such cases.

It is to be noted that the Act carries many new provisions and is much broader in its scope than the law which it replaces. With the requirements covering the matter that must appear on the label, including the name and address of the manufacturer or registrant, the name of the product, the net weight or volume, a statement of ingredients, and, in the case of toxic products, a caution or warning statement and poison labeling, —including an antidote statement—, it is evident that, in the case of small packages, the label on the package itself will frequently not carry all of this material. In such cases it will be necessary for the directions for use to be on supplemental labeling accompanying the package.

The Department has stated it is its desire "there shall be no unnecessary difficulties placed in the way of the development of better and more economical preparations," and there is every reason to believe that the Act will be administered so as to impose a minimum of burden on the industry, consistent with the carrying out the provisions of the Act and preventing abuses.

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tion of cellulosic sheeting material, (87) in making thin continuous polyamide films, (88) and in the formulation of molding compositions. (89) Brief mention should also be given to the use of copiously-foaming soaps in the production of fire-fighting compositions. (90).

In concluding, it should be pointed out that the foregoing is but an indicative review covering some of the developments of the last two or three years. Various prepared soaps were used in the examples mentioned. Many more instances could have been cited where soap was formed *in situ* upon mixing of the components, but these would not have illustrated the use of soap, as such, in industry.

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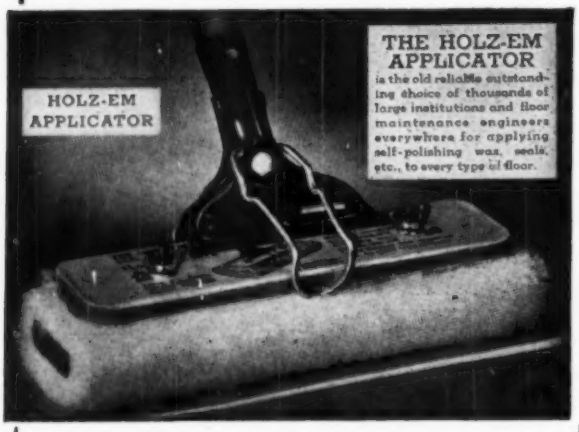
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TRADE NEWS . . .

Herbert Johnson Honored

Herbert F. Johnson, president of S. C. Johnson & Son, Inc., Racine, Wis., was recently elected to the board of trustees of Cornell University, Ithaca, N. Y., for a five-year term.

NPCA Fall Meeting Plans

Although detailed plans have not yet been released, the fifteenth annual convention of the National Pest Control Association, Brooklyn, will emphasize the return of competition of the "Thirties" and the diminishing of general business itself in all industries at this time, according to E. R. Jennings, Guarantee Exterminating Co., New York, general chairman. The NPCA convention will be held at the Bellevue-Stratford Hotel, Philadelphia, October 27-29, 1947. Program details will be published in a later issue.

Appoints Dispenser Agent

Philip Shore, Philip Shore & Associates, Los Angeles, has been appointed west coast representative for the American Dispenser Co., New York manufacturer of soap dispensers.

Derris Export Recovers

The derris-root industry of British Malaya, producing almost entirely for export, has been steadily recovering. Exports of tuba root averaged approximately 80 tons monthly in the last quarter of 1946, compared with 100 tons in pre-war years. In January 1947, they advanced to 110 tons and in April reached 150 tons. Of the 240 tons exported in the period October-December 1946, about 210 tons went to the United Kingdom.

Penick Appoints Olson

Ralph Olson was recently appointed manager of the Chicago branch of S. B. Penick & Co., New York producers and manufacturers of botanical drugs and fine chemicals. Mr. Olson succeeds Harold Meyer, vice-president, who has been transferred to the executive staff of the home office. Mr. Olson joined the company twelve years ago as representative of the Chicago branch.

RALPH OLSON

Ask Lower Pyrethrum Price

Increased competition from pyrethrum production in other countries and from synthetic insecticides has moved the East African Pyrethrum Board to recommend that Kenya growers accept, for the remainder of 1947, a price lower than the one to which they are legally entitled under their contract with the British Board of Trade.

Victor to Sell TEPP

Tetraethyl pyrophosphate should be available commercially in 1948 from Victor Chemical Works, Chicago, according to an announcement by Walter B. Brown, president of the company, on July 17th. This new insecticidal material controls aphids and spider mites, usually unharmed by DDT. It can be mixed at the point of use with carrier materials as a spray and, like hexaethyl tetraphosphate, another of the phosphate insecticides, should be used immediately after mixing. Tetraethyl pyrophosphate is expected to compete sharply with nicotine but a dust formulation for the new material is yet to be worked out. Tetraethyl pyrophosphate is said to be more stable and nearly ten times stronger than hexaethyl tetraphosphate, also made by Victor. Monsanto Chemical Co., St. Louis, is reported to be starting manufacture of tetraethyl pyrophosphate.

NAIDM Compiles Laws

A book compiling various federal and state insecticide laws is expected to be completed and ready for distribution in mid-August, reports the National Association of Insecticide and Disinfectant Mfrs., Inc., New York. The recent Federal Insecticide and Fungicide Act. (H.R. 1237) is included. The compilation will include laws dealing with insecticides, disinfectants, caustic poisons; regulations covering enforcement and interpretations; notations for reference; a list of enforcement officers; and a chart showing basic requirements for each state. The binding will be of heavy leatherette covered board, five-ring, loose-leaf; page size 6 x 9. Additions and corrections will be issued annually. Each member firm of the association will receive one copy, and yearly service on one copy free of charge. Members may purchase additional copies at $15 with service charge of $5 per year per copy.

W. S. Jessop Elected

Recent changes in the management of U. S. Sanitary Specialties Corp., Chicago, resulted in the election of W. S. Jessop as president of the corporation and G. L. Simmonds as chairman of the board of directors. John H. Clark, city sales manager for the past fifteen years and connected with the company's sales department for 23 years, was made vice-president in charge of sales.

Rotary Honors Bockstanz

S. J. Bockstanz of Bockstanz Bros., Detroit, Mich., past president of the National Sanitary Supply Association, has been chosen secretary of the Detroit Rotary Club.

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Index	Melting Point °F. Min.	Penetration 100 gm. @ 77°	Color NPA	Saponification No.	Acid No.
23	185	2–5	4½–6	55–65	20–25
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NAIDM Protests Sale of WAA Aerosol Bombs

POINTING out that many war surplus aerosol bombs which are being sold to department stores and other retail outlets by the War Assets Administration are faulty, are mislabeled under the law, and carry inadequate directions and precautions for use, the National Association of Insecticide & Disinfectant Manufacturers has filed a protest with the WAA. If these conditions cannot be remedied, the NAIDM suggests that further supplies of war-surplus bombs should be scrapped to prevent possible serious injury to users. Copies of the NAIDM protest were sent to Senator Homer Ferguson and Congressman Ross Risley, respective subcommittee chairmen on surplus property disposal of the Senate and House.

The protest to the WAA signed by H. W. Hamilton, secretary of NAIDM, states in part as follows:

"The attention of this Association has been called to the sale of aerosol bombs of various types by the War Assets Administration. These bombs are finding their way into various outlets and eventually, of course, into many retail channels. It is the desire of this Association to point out to you the responsibility which should accompany the distribution of material of this type and especially of these bombs. In the first place, many of these bombs are old and were manufactured in plants rushed with war production. It is more than likely, therefore, that a considerable proportion of the bombs themselves and the dispensing valves are faulty. This may result in danger to the user.

Another serious point is the labeling of the bombs. They were all labeled in accordance with the requirements of the Armed Services which made the purchases. They are not properly labeled for civilian use in that there are inadequate directions and inadequate precautionary labeling.

This Association desires to call your attention to the following facts:

(1) We believe it is the responsibility of the War Assets Administration to see that all aerosol bombs sold by it are properly labeled within the meaning of the Insecticide Act of 1910 and the various state laws pertaining to the sale of household insecticides.

(2) This responsibility for proper labeling goes beyond the mere documentary presentation of the facts to the purchaser. These matters should be taken care of before the bombs leave the warehouses of the War Assets Administration. All should be definitely labeled as *war surplus* when sold to ultimate users.

(3) Reasonable inspection should be made before the sale to ascertain if the bombs are functioning properly and if the bombs themselves are in good physical condition. If it is found impossible to carry out any of the above recommendations, we believe that the bombs should be scrapped, thereby preventing possible serious accidents and injury to the health of users.

There is much that could be said about injury to the household insecticide industry, which is estimated to be a $50,000,000 annual business. But, we simply ask that steps be taken to sell only good, acceptable bombs, properly labeled to comply with the requirements of the laws of the United States Government and states having such laws. We do not believe that this has been properly done up to the present time."

Gardner Advanced

Robert F. Gardner, S. C. Johnson & Co., Racine, Wis., was recently moved from the position of sales manager of the Chicago area to that of merchandiser of maintenance wax products. The Johnson Co. also announced the transfer of Robert D. Ledlie to the textile department in the New York area.

New Floor Finish Booklet

A new booklet on floor finishes, titled "What to Use and How to Use It," was recently issued by Federal Varnish Co., Chicago. Copy may be obtained by writing to Mal Flanagan in care of the company.

Low-Pressure Dispenser

A new low-pressure aerosol dispenser of light weight was recently announced by Continental Can Co., New York, and will become available during the first part of 1948. One feature of the new low-pressure aerosol dispenser is a new type valve which has been tested under storage conditions ranging up to 130°F. The new valve consists of a brass housing to which is attached a black zinc die-cast unit that holds a red rubber dispensing button. The cans themselves have the same kind of side seam as a beer can and are made of electrolytic tin plate. They are said to hold an internal pressure of 40 pounds gauge pressure per square inch at 70°F.

Continental assembles the valve in the can and then ships the unit and bottom end separately to the customer. The customer then fills the units under refrigerated conditions and, using a closing machine, automatically seals with double seams on the ends. The cans are lithographed during manufacture, enabling each customer to specify his own trademark design and colors.

Continental's new low-pressure aerosol dispenser, the first of its type yet announced, is about the size of a beer can.

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Entomological tests show the following results:

	Live Larvae	*Dead Larvae*	*Visual Damage*
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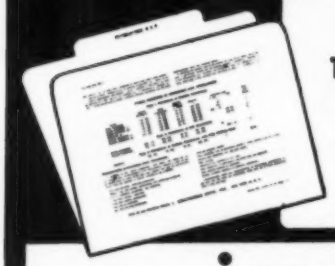

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New Herbicide by Baker

A new herbicidal chemical, isopropyl-n-phenyl carbamate (I.P.C.) for control of grasses is now under limited production by J. T. Baker Chemical Co., Phillipsburg, N. J. The antonym is recommended for quack grass. Information and test ampules are available from the company.

Back Retires from USDA

After more than 38 years' service in the U. S. Department of Agriculture, Dr. Ernest A. Back, well-known authority on the control of insect pests of household and stored products, retired from the Bureau of Entomology and Plant Quarantine on June 30th. Dr. Back first joined the Department of Agriculture in 1907 upon receiving his PhD. from the University of Massachusetts. In 1917 he was placed in charge of a new division created in the bureau to conduct investigations on insects affecting stored grains and other stored products. His investigations since have been entirely in that field and have included research on fumigation and control of insects infesting homes, hotels, warehouses, mills, grain elevators and manufacturing plants.

On August 1st Dr. Back will leave for London where, with Dr. R. T. Cotton, in charge of the bureau's Manhattan, Kansas laboratory, he will represent the USDA at an international conference of specialists on infestation of stored products.

Arkansas Plants Make DDT

Stepped-up production of DDT and chlordane has been reported by Reasor-Hill Corp., Jacksonville, Ark., using a unit of the Arkansas ordnance plant. The officers of the new firm are Dr. Lyle O. Hill; and G. L. Reasor, Chicago investment banker. The Reasor-Hill firm has invested $125,000 in buildings on the former Booster Lines No. 1 and 2 at the wartime detonator plant for ordnance production. In addition to the firm's principal products, which are weed killers, is a line of standard household insecticides of various types produced under the brand name of "R-H" products.

Diamond Alkali Co., Pittsburgh, is producing chlorine at a converted plant in the Pine Bluff arsenal group. Its principal consumer is the Michemco unit of Michigan Chemical Co., St. Louis, Mich., also located at the Pine Bluff arsenal site adjacent to Diamond Alkali. Michemco employs 80 workers to produce 30,000 pounds of bulk DDT daily at peak operation.

Bridgeport Brass "Aer-a-sol Jr."

This 3½ oz. aerosol insecticide dispenser is the newest addition to the line of the Bridgeport Brass Co., Bridgeport. A high-pressure type containing DDT and pyrethrins, it is equipped with a straight-away safety-type spray nozzle. Priced at about 95 cents, it is said to contain enough insecticide to treat approximately 23 average size rooms for flies and mosquitoes. It is proving popular with retailers as a low priced "sampling" unit.

Report TEPP Findings

In a recent report to the Federation of American Societies for Experimental Biology, Drs. George H. Mangun and Kenneth P. DuBois, toxicity laboratory, University of Chicago, stated that tetraethyl pyrophosphate had certain advantages over ANTU and "1080" as a rodenticide. It was claimed that rats do not build up a tolerance to TEPP as they do to ANTU. Unlike 1080, it is less toxic to dogs and cats than to rats. TEPP produces convulsions and death in 5 to 12 minutes whereas 1080 takes from 30 minutes to 24 hours to kill and ANTU from 12 to 48 hours. The report also states that TEPP is readily eaten by rats in a ½% mixture in food. In other words, 1/50 oz. of such food is enough to kill an average rat.

Credit Men Elect Setty

E. W. Setty, manager, credit department, H. D. Hudson Mfg. Co., Chicago, was recently elected to the board of directors of the Chicago Association of Credit Men. Mr. Setty, one time assistant credit manager of the Pepsodent Co., was appointed manager of the Hudson credit department in 1943. He has won two fellowship awards in the National Institute of Credit.

Enlarges L.A. Office

Florasynth Laboratories, Inc., New York, recently announced occupation of their new and larger quarters at 588 Mateo St., Los Angeles 13, California.

This new mosquito "fumer," developed by Tobacco By-Products and Chemical Corp., Richmond, contains 14 per cent DDT in a combustible base. The glassine window seal on the perforated crown is melted with a sparkler which then ignites the mixture, thus emitting a dense smoke under pressure.

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"Cook-Kill" Adv. Campaign

Cook Chemical Co., Kansas City, Mo., is using full page newspaper advertisements in 21 major markets and 31 secondary markets to promote its new insecticide, "Cook-Kill." After next Jan. 1 radio and other media will also be used, it was announced. Dealer helps include counter and other store displays and blowups of the newspaper copy.

Penick Sets Up Grants

The establishment of five research grants and the extension of a sixth was recently announced by S. B. Penick & Co., New York. Fellowship grants for pharmacological and therapeutic studies have been made to Universities of Illinois; Wisconsin; California; to the School of Medicine, Harvard University; and the Scripps Metabolic Clinic, La Jolla, Calif. A grant to the University of Michigan has been extended to January 1, 1948.

New Wax Extender

A new emulsion developed for use in extending carnauba wax-water emulsions was recently announced by Advance Solvents & Chemical Corp., New York. The emulsion, trade marked as "Emulsion 63" may be used to replace 25 to 40% of the wax solvents in emulsions and can also be used to replace gums and resins now employed to extend carnauba wax. "Emulsion 63" weighs about 8.6 pounds to the gallon, has a specific gravity of 1.03, has 40% solids and a pH of 10. A formula for extending a 15% solids wax emulsion is recommended by the company as follows: 102 parts wax emulsion, 26 parts "Emulsion 63," 3.8 parts "Duponol ME" (10%), 2.5 parts 2 methyl 2-4 pentanediol. The new emulsion extender is said to be very stable and can be stored for several months without any deteriorating effect.

George White Named

George A. White, Cincinnati sales representative for Innis, Speiden & Co., New York, was named Cincinnati manager in July. Mr. White joined the company in 1941 at the New York office and moved into sales in New York State in 1943 where he continued until he was transferred to Cincinnati last year.

Shown in this aerial view are buildings of the new chlorine, caustic soda and DDT plant opened June 21st in Portland, Ore. by Pennsylvania Salt Manufacturing Co., Philadelphia. The chlorate plant, office, and warehouse, completed in 1942, comprise the saw-tooth-roofed buildings at the right. New construction is: Left, front to rear—Rectifier room, cell room, caustic evaporator room (three-story, attached to cell room), liquefaction building, and DDT building. Center, front to rear—Contractor's quonsets, drum shop, liquid caustic soda tanks. The DDT plant is housed in a two-story, concrete, steel and tile building 40 by 80 feet. Outside storage is provided for sulfuric acid, alcohol, and monochlorobenzene. Production of 450,000 pounds of DDT products a month is expected.

Increases HETP Output

Increased production of hexaethyl tetraphosphate was recently announced by Eston Chemicals, Inc., Los Angeles, a pioneer western producer of this chemical.

Tanglefoot "Industprayor"

The Tanglefoot Co., Grand Rapids, Mich., is using large display space in Chicago newspapers to present "Industprayor,' a new industrial insecticide sprayer for insect control in large areas, and two new insecticides, "Industpray," and "Difuso" for use with it. Riddiford Bros. Inc., Chicago, is named as distributor in the area.

Roark Gives Para Facts

Shortly after a small "Tale Ends" item on the use of paradichlorobenzene was published in the June issue of *Soap & Sanitary Chemicals*,—giving credit for first commercial applications in the United States to George Garnet of Allentown, Pa., for moth use and to Harold Koppelman of Chicago for deodorizing,—various and sundry readers called the editorial department to task. Not all critics were in agreement,—but all agreed that Roark at Beltsville knew the correct answer.

From Dr. R. C. Roark, well-known director of Insecticide Investigations for the USDA at Beltsville, Md., a statement of the para facts has been received. Says Dr. Roark: "The use of paradichlorobenzene for destroying moths and insects infesting hides, furs, and museum specimens was invented by Arnold Erlenbach in Germany. Patents covering this use were issued in 1911 in Germany (German patent 258,405), in 1912 in England (Brit. patent 19,688), and in 1914 in the United States (U. S. patent 1,097,406). A German preparation for combating clothes moths called "Mottex" which consisted entirely of paradichlorobenzene was first imported into the United States about 1912 and it is quite possible that George Garnet of Allentown, Pa. marketed this product or a similar product.

"I believe that the use of paradidichlorobenzene in block form for deodorizing purposes was developed by me when employed by Mr. Harold Koppleman in Chicago in the summer of 1918. Application for a patent covering this invention was filed by me in October 23, 1918 and U. S. patent 1,346,337 covering this invention was granted on July 13, 1920. Mention of this development is made by Schwarcz in his book 'Sanitary Products' published by MacNair-Dorland Co. in 1943."

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Insecticides in Food Plants

Speaking on the subject of insecticides as used in the food processing industry, at the convention of the National Confectioners Association at Chicago in May, Milton E. Parker, Chicago food production consultant, stated that the candy maker should exercise extreme caution in his consideration of insecticides, germicides and rodenticides for use in his sanitary control program. Most pest control chemicals are not developed specifically for use in food processing establishments and therefore the hazard may be great. He pointed out that some pest control operators as yet lack complete understanding of the toxic properties of many of the newer synthetic organic chemicals.

He claimed that DDT has no place in the insect control program of candy manufacturers and warned against use of "1080" and ANTU. Fortified red squill, he recommended as the safest rodenticide for use in candy plants. He considers only pyrethrum and rotenone as preeminently safe insecticides for use in food processing establishments, and pointed out that any insecticide to replace them will have to be compared exhaustively with them before food manufacturers can be assured of safety and effectiveness.

Aerosol bombs, he said, have definite practical limitations for food plant sanitation purposes and atomizers using heat or steam for propulsion are generally not satisfactory because both heat and steam dissipate and dilute most insecticides.

Industrial Fumigant Co., Chicago, was the lone exhibitor in the sanitation field at the confectioners' trade show. Displayed in their booth were industrial fumigants suitable for use in candy plants. In another booth, featuring mounted specimens of rats, flies, roaches and other pests, the Association's newly organized sanitation program was explained to visitors by G. S. Doolin, director of the service.

Recovers Sugar Cane Wax

An economic solvent process for the recovery of crude wax that forms a thin coating on sugar cane has been developed by R. T. Balch and C. B. Broeg of the Houma, La., laboratory, Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. D. A. After recovery, the wax is further treated with solvent in order to separate fats and purify the wax for industrial uses. Sugar cane wax, which resembles carnauba wax, is concentrated in the waste filter press cake that remains after clarifying cane juice. In making sugar, the juice is treated with lime and the sediment is filtered off. The waste press cake from the filter is used as fertilizer and the removal of the wax and fat will enhance its use as such.

New Plant and Lab. Enamel

A new rubber-base enamel, recently announced by Wilbur & Williams Co., Boston, is claimed to offer advantages to chemical plants and laboratories where it is advisable to rinse away any salt deposits from walls or equipment immediately before repainting. The new product, "Rubberized Dampcoat Enamel" is said to provide in a single product a fume and spillage resistant coating adaptable to difficult plant conditions, and resistant to acid and alkali splashing and spilling. The high gloss enamel is available in white, black, aluminum and nine colors and may be applied to wet surfaces.

NSSA Detroit Meeting

The central region division of the National Sanitary Supply Association has announced that its fall meeting will be held September 11th and 12th at Hotel Fort Shelby, Detroit. Mal Flanagan, Federal Varnish Co., is central regional vice-president.

Approve Arkansas PCA

Incorporation of the newly organized Arkansas Pest Control Association was approved June 17, by the Pulaski Circuit Court, second division. Officers and directors of the trade association are E. Allen Biddle, president; J. Harvey Hewitt, vice-president; Carl L. Whitson, secretary-treasurer; Delton Mills, director; and W. A. Black, director.

Offer New Bird Repellent

Grosley Products Co., 767 Milwaukee Ave., Chicago 22, has recently introduced a new product, "No Roost," a chemical repellent for use against pigeons, starlings, sparrows and other birds which roost on buildings. Described as a "sticky substance," the repellent material is applied in a 3-inch band on window sills, cornices and other roosting spots, where it remains effective nine months or more, it is claimed.

NSDA Elects Hudson

R. C. Hudson, H. D. Hudson Manufacturing Company, Chicago, was elected president of the National Sprayer and Duster Association on June 20. Harold F. Brandt, Dobbins Manufacturing Company, Elkhart, Indiana, was elected vice-president. R. D. Lewis, Frank J. Zink and John F. Benham, all of Chicago, were reelected treasurer, counsel and executive secretary respectively. G. H. Collier of Elkhart, is the retiring president.

At the meeting, the member manufacturers reported an increasing demand for hand dusters and small hand and power sprayers. Both the city and farm market for spraying and dusting equipment has been strong this year, with more farmers, gardeners and home owners spraying for fly and weed control.

The sprayer and duster manufacturers report that plants are still operating far from capacity because of tin and steel shortages. The organization authorized a study of changing market needs for spraying and dusting equipment. Educational projects to acquaint the public with the proper use of sprayers and dusters were also approved at the business meeting.

Elected members of the executive board in addition to the officers were: Ralph H. Chapin, R. E. Chapin Manufacturing Works, Batavia, N. Y.; T. M. Burton, D. B. Smith and Company, Utica, N. Y.; C. D. Leiter, F. E. Myers & Bro. Company, Ashland, Ohio; S. H. Samuels, Standard Container Corporation, Montclair, N. J., and V. A. Snell, Lowell Manufacturing Company, Chicago.

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Positions Wanted

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Miscellaneous

Dry-Bright Wax Emulsions: Formulas developed by consulting chemist from carnauba and substitutes are for sale. Address Box 854 c/o *Soap & Sanitary Chemicals.*

Cooperative Research Laboratory: Graduate chemist with 20 years experience in dry-bright wax emulsions, polishes, resin coatings and allied products desires to contact several responsible companies who would be interested in establishing a cooperative research laboratory. Address Box 855 c/o *Soap & Sanitary Chemicals.*

Machinery Wanted: Package machinery soap wrapper type S-3 or type N-4 with roll feed outer wrapper, and roll feed inner wrapper to handle a bar 4½" long, 2¾" wide, 1-5/16" thick. Address Box 857 c/o *Soap & Sanitary Chemicals.*

Attention Manufacturers: We compound products sold through grocery and hardware stores and other channels. We are interested in extending our line. If you manufacture a base for such specialties, we will be pleased to have you advise us. Address Box 858 c/o *Soap & Sanitary Chemicals.*

Janitor Supply & Chemical Company in business for fifteen years at Los Angeles. A fine reputation for quality merchandise, and a complete set-up showing a nice profit. Owner retiring. Address Box 859 c/o *Soap & Sanitary Chemicals.*

Lines Wanted: By manufacturer of potash soaps and sanitary chemicals, now selling to janitor supply houses along Atlantic Coast. Interested in distributing equipment or chemical products allied to items now manufactured, to same trade. Address Box 863 c/o *Soap & Sanitary Chemicals.*

Interested in Representation? If you are a producer of raw materials used by the soap industry and would be interested in Southern Ohio representation, Address Box 856 c/o *Soap & Sanitary Chemicals.*

Distributor Wanted: Wanted exclusive distributor for waterless hand soap. Dissolves grease, tar, paint or dirt without water. Harmless to hands, contains no ammonia. Address Box 868, c/o *Soap & Sanitary Chemicals.*

For Sale: Offer subject to prior sale 15,000 pounds or any part thereof pure technical grade DDT powder, minimum setting point 89° or higher for cash. When writing state quantity wanted and best offer per pound. Address Box 852 c/o *Soap & Sanitary Chemicals.*

For Sale: Used World Labeler, model S improved, semi-automatic. Attachments for applying body and neck labels on pints, quarts, and splits. Also Boston round pints and others. Price of $385. FOB Detroit includes over $200 worth of new attachments. Crating extra. Address Box 853 c/o *Soap & Sanitary Chemicals.*

For Sale: Nationally advertised diaper-wash business with boxes at sacrifice. Address Box 860 c/o *Soap & Sanitary Chemicals.*

For Sale: 1—powder filling machine with vibrator and a thousand pound capacity hopper. 2—Hexagon tumblers, 200 pound capacity each. 2—20 ft. belt conveyors. 1—400 gal. steam coiled lined mixing tank. Address Box 861 c/o *Soap & Sanitary Chemicals.*

For Sale: 3000 pounds insecticide powder containing 10% DDT, 8% Pyrethrum, 82% Pyrex, 15c per pound, packed 150 pound drum. Address Box 862 c/o *Soap & Sanitary Chemicals.*

For Sale: 5000 new cans, excellent for powders or any dry materials, measures 8½" x 6" x 3¾", round friction top 3½" diameter. Lithographed blue with words "Overseas Shipping Container" on two sides. Will hold about five pounds of powder. Price 4.25 per hundred FOB Baltimore, Md. Sample can on request. Carlea Sales Co., 516 W. Franklin St., Baltimore 1, Md.

For Sale: Soap manufacturing plant for making cold process granulated soap; 2 soap granulators; one complete Triangle packaging line, including 2 electric gluers; one new electric filling and weighing machine, capacity 20-24-1 lb. or 1½ lb. packages per minute; a quantity of chemicals, soap making materials, and large quantity of packages and shipping cases; also, all machinery and tanks necessary to manufacture granulated soap. Location: Los Angeles, California, territory. Price reasonable. Will sell plant intact, or machinery and materials separately. For full information address Box 864 c/o *Soap & Santiary Chemicals.*

For Sale: Soap making equipment. Proctor & Schwartz Flake Soap Dryer; 100—1200 lb. soap frames; 5 roll water cooled steel mills; automatic tooth paste filler; laundry bar soap cutting table; new foot presses; all excellent condition; available immediately; N.Y.C. area. Address Box 869 c/o *Soap & Sanitary Chemicals.*

Will Purchase Immediately— Pneumatic Packaging Machine, used for chips, powder, cleanser; also dry mixers, chip dryers, crutchers, and automatic soap press. Address Box No. 866, c/o *Soap & Sanitary Chemicals.*

I.C.C. Labels Stocked: No. 1 Red Caution, No. 2 Yellow Caution, No. 3 White Acid, No. 4 Poison, No. 6 Corrosive Liquid, No. 7 Fireworks, No. 8 Red Gas, No. 9 Green Gas. 500: $1.25, 1000: $2, delivered, F. E. Point, Dept. SSC, South Amboy, N. J.

For Sale: No. 12 Sweetland Filter 71 Copper leaves; No. 2 Sweetland 23 leaves; 6—Sharples No. 5a Stainless Steel Oil Purifiers; 12—Sperry & Shriver 30", 32" & 40" sq. iron filter presses; also 18" to 42"; 1—Rotex sifter 20" x 81", 3 deck; Houchin 12" x 24" 2 roll granite stone mill; New 40 gal. pony mixers; new stainless steel tanks 100 to 5000 gals.; stainless, glass lined, aluminum & copper jack. Kettles 40 to 500 gals.; stone mills; dryers; mixers; screens; grinders; kettles & tanks; pumps; roller conveyor; etc. Send for latest bulletin. We buy your surplus equipment for cash. Stein Equipment Co., 90 West St., New York 6, N. Y.

For Sale: 8 drums containing 440 gallons soap concentrate—liquid. Part coconut, part vegetable oil with soap concentration of 30 per cent. Address Box 867 c/o *Soap & Sanitary Chemicals.*

For Sale: Immediate delivery 20,000 pounds, or any part thereof, pure, technical grade DDT powder packed in 5 pound tins—6 tins or 30 pounds to a carton. This material was made by highest quality manufacturer making DDT. Price 40c per pound in 5000 pound lots or more and 42c per pound in smaller quantities. Address Box 865 c/o *Soap & Sanitary Chemicals.*

For Sale: Brand new—not army surplus—one horizontal heavy duty mixer with motor 4000 pound mix, 20 HP, all welded steel construction. Price $1935.50. Du-Rite Chemical Co., Brentwood, Maryland, Warfield 1662.

For Sale: 1—3500 lb. Soap Crutcher; 1 — Mikro pulverizer, Model 1 SH; 1—Lehman 5 roll steel water cooled refiner, 20" x 48"; 3—soap powder fillers; 18—Shriver Filter Presses, 30" to 36" cast iron; Pumps; etc. Send us your inquiries. Brill Equipment Company, 225 West 34th Street, New York 1, N. Y.

Hyman Appoints Two

Julius Hyman & Co., Denver, recently announced the appointment of Floyd Hutchings as field entomologist. Mr. Hutchings specialized in entomology at the University of Washington, Seattle, under Dr. M. H. Hatch, and following his discharge from the Navy resumed his studies at Oregon State College.

Also appointed to the company's sales staff was Stephen Otis, formerly connected with a Chicago chemical manufacturer. Mr. Otis will be assigned to the midwest territory where he will assist Dr. Charles C. Compton in entomological and sales activities.

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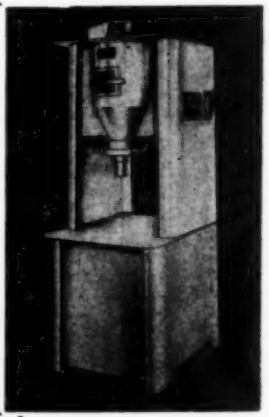

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INDEX TO ADVERTISERS

*For further details see announcement in 1947 SOAP BLUE BOOK

Albert Albek, Inc. 166
*Alrose Chemical Co. 76
*Alsop Engineering Co. 82
*American-British Chemical Supplies. 63
American Can Co. 111
American-Standard Mfg. Co. 152D
Anchor Hocking Glass Corp. 122, 138
Applied Research Labs. 169
*Aromatic Products, Inc. 103
*Armour & Co. 13
*Associated Chemists, Inc. 87
*Attapulgus Clay Co. 105
Axton Cross Co. 164

*Baird & McGuire, Inc. 112
*J. T. Baker Chem. Co. 128
*Barrett Division 144
Albert J. Bendler 169
Benson Process Eng. Co. 169
*Bobrick Mfg. Corp. July
Paul D. Boone 169
Buckingham Wax Co. July
Bush Aromatics 76

*Candy & Co., Inc. 134
*Carbide & Carbon Chemicals Corp. July
R. E. Chapin Mfg. Wks. 166
Chemical Mfg. & Dist. Co. 25
*Chemical Service Co. 16
Chemical Supply Co. 152
John A. Chew, Inc. July
*Antoine Chiris Co. July
Chas. B. Chrystal Co. 168
Cin-Made Corp. June
Coaltar Chemical Co. 164
Commercial Cleanser Co. 169
Compagnie Parento 154
Concord Chemical Co. 148
*Consolidated Products Co. 172
*Continental Can Co. 102
Cowles Detergent Co. 61
Alvin J. Cox 169
Crosby Chemicals, Inc. 168
Crown Can Co. 96

*Davies-Young Soap Co. 12
*Derris, Inc. 172
*Diamond Alkali Co., Standard Silicate Division 2nd Cover
*Wm. Diehl & Co. 158
Harry W. Dietert Co. 80
*Disco Co. 157
*Dodge & Olcott Co. Front Cover, 110
*Dow Chemical Co. May
*E. F. Drew & Co. 78
*P. R. Dreyer, Inc. 130

*E. I. du Pont de Nemours & Co. Facing 55
*Eastern Industries June
Elkay Products Co. 160
Emery Industries 8
Emulsol Corp. June
Enjay Co. 150
Essential Chemicals Co. July

Federal Tool Corp. July
*Federal Varnish Co. 152
*Felton Chemical Co. 10, 88
Filtrol Corp. Bet. 70, 71
Fine Organics, Inc. 162
*Firmenich & Co. 4th Cover
*Florasynth Laboratories. Facing 71
Franklin Research Co. July
Fritsche Brothers, Inc. 48
*Fuld Brothers 3

Garnet Chemical Co. 144
*Geigy Co. 124
General Chemical Co. 24
*General Drug Co. 160
*R. Gesell, Inc. 174
*Givaudan-Delawanna, Inc. 20, 21
R. W. Greeff & Co. 152B
Griffin Chemical Co. 164
A. Gross & Co. 6
Gunning & Gunning 172
*Haag Laboratories 154
*Hardesty, W. C., Co. 31
Hercules Powder Co. 118
Hochstadter Lab. 169
*Hooker Electrochemical Co. 60
Hospital Management 22
*Houchin Machinery Co. 64
H. D. Hudson Mfg. Co. 107
*Julius Hyman & Co. 140
*Hysan Products Co. 9

Independent Specialties July
Industrial Management Corp. May
Inland Steel Container Co. July
*Innis, Speiden & Co. 52
Institutions Magazine 28

J Chemical Works July
James Laboratories 169
R. A. Jones & Co. 32

Karl Kiefer Machine Co. July
Kinetic Chemicals, Inc. 98
Kolker Chemical Works 162
*Kranich Soap Co. 62

Lancaster, Allwine & Rommel 169
Alan Porter Lee 169
*J. M. Lehmann Co. 83
Lowell Mfg. Co. 153
*Geo. Lueders & Co. 56

Mackenzie Laboratories 58
*Magnus, Mabee & Reynard, Inc. 108
N. I. Malmstrom & Co. June
Mantrose Corp. 153
Maryland Glass Corp. Bet. 54, 55
Mayfair Industries, Inc. 172
Maywood Chemical Works 66
J. W. McCutcheon 169
C. C. McDonnell 169
McLaughlin Gormley King Co. 95
*Merck & Co. 100
*M. H. Laboratories 155
Mirvale Chem. Co. July
Molnar Laboratories 171
Monsanto Chemical Co. 4, 23, 92
*Moore Bros. Co. 89

National Aniline Division 30
National Assn. of Insecticide & Disinfectant Mfgrs. 94
National Can Corp. 109
National Milling & Chemical Co. 150
*Newman Tallow & Soap Machinery Co. 170
*Niagara Alkali Co. 15
Norda Essential Oil & Chemical Co. 18

Oil States Petroleum Co. 82
Onyx Oil & Chemical Co. 97
*Orbis Products Co. 99
Oronite Chemical Co. July
Owens-Illinois Glass Co. 27

Packard Container Corp. 158
Peck's Products Co. 157
*S. B. Penick & Co. 106
*Pennsylvnaia Refining Co. 146
*Per-Mo Products Co. 156
Petrolite Corp. 160
Philadelphia Quartz Co. 19
Philipp Brothers Chemical. 157
*Pittsburgh Plate Glass Co. Columbia Chemical Division. July
Potdevin Machine Co. 166
*John Powell & Co. 90, 91
*R. J. Prentiss & Co. 136
*Proctor & Schwartz, Inc. 70
Puro Co. 11
*Pylam Products Co. 168

R. C. Can Co. June
Regal Chemical Corp. 132
*Reilly Tar & Chemical Co. 152D
*Rex-Cleanwall Corp. 146
Rheem Mfg. Co. July
Riches-Nelson, Inc. July
W. C. Ritchie & Co. 7
Robinson Wagner Co. 84
Geo. G. Rodgers Co. Inc. 174
*Rohm & Haas Co. 142
Rose Bros. Co. 174
Roure-Dupont, Inc. 74
*Rumford Chemical Works 26

Sanitary Soap Co. 14
*C. G. Sargent's Sons Corp. July
*Schimmel & Co. 72
Scottdel, Inc. 164
Seaboard Distributors, Inc. 29
Seeley & Co. 162
Seil, Putt & Rusby 171
Sharples Chemicals Inc. 17
*Skinner & Sherman 171
*Skotch Products Corp. 168
*Foster D. Snell 171
*Solvay Sales Corp. 101
L. Sonneborn Sons 162
*Sprayer Corp. of America 155
Spraying Systems Co. July
F. W. Steadman Co. 152B
Stevens-Wiley Mfg. Co. July
Stillwell & Gladding 171
*Stokes & Smith Co. 84
Sweeping Compound Mfrs. Co. July

Tamms Silica Co. 166
E. G. Thomssen 171
*Tombarel Products Corp. 80
Triangle Package Machinery Co. 78
Trio Chemical Works 148
Jos. Turner & Co. 46

Ultra Chemical Works July
*Uncle Sam Chemical Co. July
Ungerer & Co. 3rd Cover
Union Pacific Railroad 68
U. S. Bottlers Mchy. Co. 85
U. S. Industrial Chemicals, Inc. Bet. 70, 71

*Van Ameringen-Haebler, Inc. 50, 104
Van Dyk & Co. 93
R. T. Vanderbilt 158
*Velsicol Corp. 126

Warwick Wax Co. May
*T. F. Washburn Co. 156
*Welch, Holme & Clark Co. Bet. 54, 55
Williams Industries 171
Winthrop Chemical Co. June
*Wurster & Sanger, Inc. 171
Wyandotte Chemicals Corp. July

York Chemical Co. July

Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

Ah, Memories!

HUMAN memory is notoriously short. Elephants may remember,—but, given half a chance, the first thing a human does is forget. This is particularly true in the case of busy persons in business and industry. Unless they are constantly reminded of you and your products, other matters,—and possibly competitive products, — move into their minds to replace thoughts of you. Hence, the farflung growth of modern advertising, the science of never letting people forget you.

And in the field of soaps and detergents, household insecticides, disinfectants, floor waxes, other chemical specialties, memories too are short,—but, never will they have a chance to forget if you advertise regularly in

SOAP *and Sanitary Chemicals*

254 WEST 31st STREET NEW YORK 1

Tale Ends

WELL, boys, Congress extended the oil, fat, soap, [illegible] port and export controls for an[illegible] six months. Which means, blu[illegible] speaking, that they have postpon[illegible] the time when things will return permanently to an even keel by exactly six months. We can postpone the day of reckoning, but sooner or later, the old law of supply and demand always comes back to smack us right in the teeth!

* * *

Watch for copra production in the Philippines to fall off a few months hence. C. N. Agronomo, head man of the Philippine Coconut Planters Assn., told the AP recently that IEFC allocations, based on "erroneous information," were partly to blame for the sharp break in the copra market. By early 1948, coconut oil could again be on the scarce side. Ah, government controls! How beautifully you can gum up the parade!

* * *

P & G advertising of "Prell" shampoo with its "no gummy soap film, no harsh chemicals" theme certainly has the potash soap shampoo boys tearing their own hair out by the roots.

* * *

Having looked over the Veterans Administration latest amended performance specification for liquid insecticide, — "effective" a g a i n s t roaches and members of the mite family . . . a kill of 85 per cent in 48 hours against either American or German cockroaches . . . and the OTI kill adjusted to be within the range of 40 to 50 per cent . . . we suggest that the following should be added to their Specifications Committee, — one clairvoyant, one juggler, and one entomologist preferably with a background in the numbers racket.

* * *

Important news: Dr. Al Weed, Powell big bug expert, smokes Sweet Caporal cigarettes. Nels Gothard of Sinclair, NAIDM prez, smokes Picayunes. You never can tell what "men of distinction" will do next.